

# The United States Miller

Volume 8.—No. 1.

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## British and Irish Flour Mills.

### THE CROWN CORN MILLS, SHEFFIELD.

It is doubtful whether any one who has not seen Sheffield is capable of forming anything like a correct notion of the influence that smoke has upon the appearance of a landscape. In approaching that busy and bustling town, from any quarter, on a summer's day, when the sky is cloudless, and the beauties of the earth—field and forest, hills and plains, rivers and lakes—are brilliant under the light of the sun, the traveler suddenly becomes conscious of a growing, gathering gloom, for which he can not account. Under the impression that a storm is gathering, he looks from his carriage window, but he finds the sky without a cloud, and, puzzled to account for the phenomenon, if he asks a fellow-traveler who may happen to be acquainted with the locality, he will be informed that they are nearing Sheffield. As the train advances the information he has obtained is speedily confirmed by his senses. When he first became conscious of a change in the light, he had entered the fringe of a tenebrious canopy, which grows denser and denser until he reaches its centre, when naturally his first impressions of a town which seems to have some affinity to the cuttle-fish are not of the most favorable character. Sheffield, however, like a great deal else in this world, must not be judged simply by appearance, especially by first appearances. It cannot be affirmed that it is a handsome town in any strict sense of the term, and the finest of its streets and the most imposing of its buildings speedily become encrusted with a carbonaceous deposit, which greatly mars whatever beauty they may have originally possessed. The smoke, however, that mars the appearance of the town, and, to some extent, the beauty of the scenery by which it is girdled, in the estimation of strangers, is an element connected with the forces which have contributed to make Sheffield one of the most important of English industrial centres. To the world in general the capital of Hallamshire is known for

the excellence of its products in iron and steel, and as the growth of the industry in any community is necessarily accompanied by a corresponding growth in population, which must have a constant supply of bread, a flour milling industry has been developed in Sheffield of a highly important character. The Sheffield millers take rank among the most progressive in England; they were, for one thing, among the leading pioneers in the work of association, which, since the establishment of the National Association of British and Irish Millers, has been proceeding so satisfactorily, and they have shown their appreciation of improved methods of milling, and of improvements in the mechanical appliances used in the art, by a desire to advance with the times.

In our September issue we gave notice of the opening of a new mill in Sheffield, of which we promised to give particulars in a future number. We have now the pleasure of laying before our readers a full description of the details and general arrangement of that establishment.

The mill is situated in Nursery street, near the river, and separated from the M., S. & L. railway by Spitalfields, and is the property of Mr. John Aizlewood, formerly of the Albion Mills, a gentleman who holds a prominent

position among the leading millers of Sheffield. The building is of solid construction, built entirely of brick, and designed by Mr. T. Jenkinson, architect. The mill proper is 57 feet long by 46 feet wide, and is six stories in height. On the right hand side is the engine house, next to which is situated the boiler house, and at the entrance gates the offices are placed. On the other side of the mill, and immediately adjoining, the warehouse is situated, which is 66 feet long by 50 feet wide, and rises the full height of the mill, from which it is separated by double fire-proof doors in every story. Adjoining the warehouse are the stables, hay stores, cart sheds, and other out-buildings. At some future time it is proposed to erect a bridge from the warehouse to the railway, so as to run the trucks direct in, the necessary provision for which has been made.

On the ground floor of the mill is fixed strong ornamental iron hurst frames for fourteen pairs of mill-stones, of which twelve are French and two greys, and provision is made for six pairs more when required. These stones are all driven by half-cross leather driv-

dressing machines, used for dressing the rolled middlings, is on the same floor. On the second floor are fixed two of the ordinary silk dressing machines, also two large exhaust fans, one for each six pairs of French mill-stones. On the same floor there is a line of shafting the entire length of the mill, which extends into the warehouse, and the necessary counter shafts for driving the various machines. In this room the wheat bins for feeding the mill-stones commence, and are continued through three floors upwards. On the third floor are two other silk dressing machines fixed directly over the two in the floor below. There are also two of Carter's chilled iron roller mills for crushing the middlings. On the fourth floor are two other silk dressing machines working in connection with the others on the lower floors. On this floor are the middlings purifying machines, which consist of one of Sutcliffe's patent middlings purifiers, and three of the patent tripartite helvetic centrifugal purifiers. These latter machines are simple and effective, and have, it is said, given great satisfaction, the first one having

ed over a centrifugal drier, and delivered into sacks. All the machinery connected with the wheat cleaning process is driven by one large belt, 12 inches wide, direct from the main shaft, and can be stopped or put in motion by means of a tightening drum, worked by hand wheel and screw, without stopping the mill. The screen rooms are all separated from the mill by double fireproof doors in each story.

The warehouse is arranged in a series of bins, into which the grain is delivered, from any of which it can be drawn as desired, by means of screw conveyors, which conduct it to elevators, from which it is raised into a Barnard's patent dustless separator, through which all the grain passes before going into the screen rooms. All the shafting throughout the mill is of Bessemer steel, fitted with iron couplings with counter-sunk bolts; everything is substantial and well finished, and in every detail care has been taken to economise labor as much as possible. Hose pipes, with hydrants, are placed in each room, to be at hand in case of fire. The whole of the machinery is driven by a horizontal compound

tandem engine, of about 52 nominal horse power, with high and low pressure cylinders, and capable of transmitting 460 indicated horse power. The main driving drum on the crank shaft is 20 feet in diameter, by 34 inches wide on the face, and is made a sufficient weight to serve as a fly-wheel; the rim is in segments with faced joints, and turned and balanced to suit the high speed (viz., 55 revolutions per minute) at which it runs.

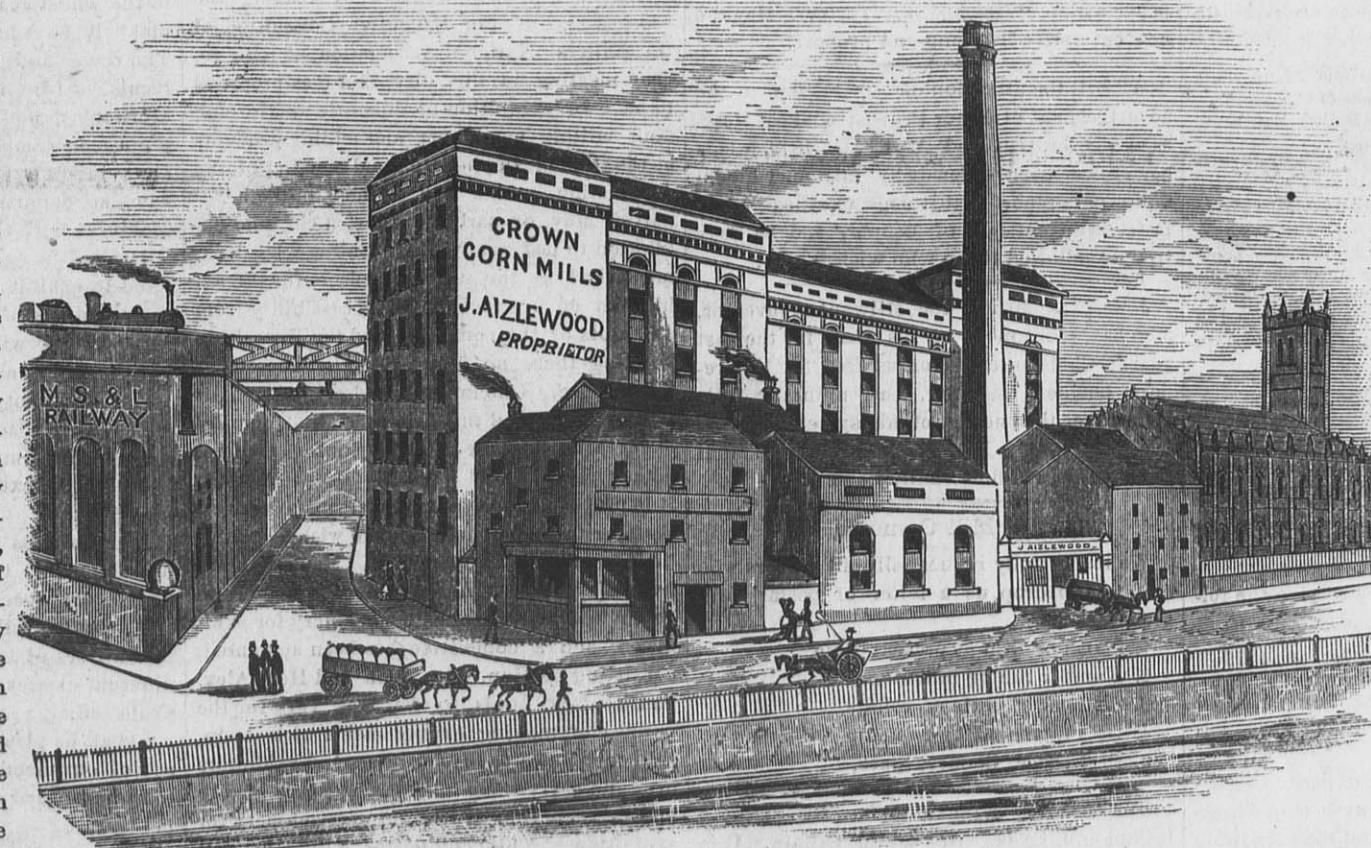
The power is transmitted direct from this drum on to a drum 7 feet 6 inches diameter, on the main shaft, by a leather belt 33 inches wide, which is supplied by Messrs. Colley & Son, of Sheffield. This engine, which was made by Messrs. Clayton, Goodfellow & Co., engineers, Blackburn, is fitted with their variable cut-off expansive motion, which is controlled by the governor, so as to self-regulate the expansion of steam in the cylinder to the variations of the load.

The engine is supplied with steam from two boilers, each 30 feet long and 7 feet in diameter, with two flues through each, fitted with five oblique transverse circulating tubes, and the furnaces being made of steel plates. These boilers were supplied by Messrs. Davy Brothers, of Sheffield. The driving belts (with the exception of the main driver) have been supplied by Messrs. A. & W. Ormerod, of Rochdale, and are of fine quality. All the machinery with the exception of the purifiers, rollers, etc., has been manufactured and erected by Mr. Joseph Bedford, the well-known corn mill engineer, of Leeds.

The mill, when full working, is capable of producing upwards of 1,200 sacks of flour per week.

From our illustration it will be seen that the mill is effective in an architectural sense, the variety of the outline presented by the design divesting the building of that monotonous effect which similar buildings so frequently present.—*London Miller.*

MESSRS. E. Sanderson & Co., proprietors of the Phoenix Mills, Milwaukee, are placing four new steam boilers by the side of those now in use. Improvements generally have been made or are being made to nearly all the flour mills in Milwaukee.



THE CROWN CORN MILLS, SHEFFIELD.

ing belts from the main shaft, which runs down the centre of the mill from the engine house, the stones being fixed in two lines, half on one side of the mill and half on the other side. Each driving pulley has fixed alongside it a loose or dead pulley, working independently on a boss, clear of the shaft, so as not to wear it. By this arrangement each pair of stones can be stopped or set in motion without stopping the engine. The hurst framing is very neat in design and substantial in construction, and is provided with iron pans on the top to receive the stones. All the spindles are of Bessemer steel, and all the stones are supplied with a universal lift motion, used when stopping or starting the mill. On the same floor are two self-acting sack possessors for taking off the flour. All the flour and offals are sacked on this floor and loaded direct into the wagons, the floor being made sufficiently high above the level of the yard for that purpose. All the shafts in the upper part of the mill are driven by belts from the main shaft in this floor.

On the first floor are the mill-stone cases, exhaust trunk pipes, which are provided with self-acting cleaning apparatus, offal dressing machines, oat crushers, and bean splitters. One of Bedford's new patent centrifugal silk

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CHARLES H. BRAZEL, of Tyne River Depot, Vt., has patented an improvement which is intended to remove the closely adhering smut, as well as that which lies loose among the kernels.

WE are glad to note the prosperity of the Kansas City Price Current. It has recently been doubled in size and its columns are largely sought after by enterprising advertisers. It is devoted to commercial and live stock interests.

WE respectfully call the attention of our readers to the advertisement of Jas. Hill, of Wilkesbarre, Pa. the inventor and manufacturer of a button for bags. It is a cheap, useful and durable article. Samples sent on application.

S. G. READ, of Morriston, Sullivan Co., N. Y. is the inventor of a safety lamp for mills. It is so constructed that it appears as if it could not explode or dust reach it. The air which passes to the flame is first purified by passing through water. If Mr. Read has invented a perfectly safe lamp for flour mills, and we think he has, he has conferred a lasting benefit on the milling fraternity.

THE Northwestern Trade Bulletin, of Milwaukee is now the recognized organ of commercial trade generally throughout the Northwest. It is carefully and ably edited and the strictest attention is paid to the correction of the general market reports up to the hour of going to press. It is patronized well by the Milwaukee dealers and the wide awake Chicago business men are using its advertising

columns liberally. It has a circulation of 5,000 copies per week. The subscription price is \$2.00 per year. It is published by Trayser Bros., No. 62 Oneida St., Milwaukee Wis. No dealer in the Northwest should be without it.

THE GRATIOT WHEAT HEATER.—A few days since we had the pleasure of visiting the copper and brass works of Herman Pietsch in this City, where the well known Gratiot Wheat Heaters are made. The best of workmen are employed in the manufacture of these heaters under the personal supervision of Mr Pietsch, and when each cylinder is completed it is subjected to a hydraulic test of 140 pounds. On our visit the workmen were engaged in filling an order for twenty heaters for a Liverpool mill. Mr. Pietsch manufactures all sorts of Brewery and Millers copper and brass work.

A CORRESPONDENT of the *Scientific American* says: "Let anyone who has an attack of lock-jaw take a small quantity of turpentine, warm it and pour it upon the wound, no matter where the wound is, and relief will follow in less than one minute. Nothing better can be applied to a severe cut or bruise than cold turpentine; it will give certain relief almost instantly. Turpentine is also a sovereign remedy for croup. Saturate a piece of flannel with it and place the flannel on the throat and chest, and in every severe case three or four drops on a lump of sugar may be taken inwardly. Every family should have a bottle on hand."

THE UNITED STATES PATENT OFFICE.—A statement of the operation of the Patent Office for the last fiscal year, shows that during 12 months ending June 30, last, 19,300 applications for patents were received, and 2,000 caveats filed, 12,471 patents issued, 1,547 trade-marks and labels registered, and 268 patents granted, but withheld for payment of final fees. Total receipts of the office, \$703,146, being \$154,494 in excess of the total expenditures. The acting commissioner informs Secretary Schurz that the recent reductions in the amount of appropriations made by congress has not only crippled the office seriously, but have begun to dry up the sources of revenue.

THE Imperial Statistical Office, publishes for the first time figures giving the agricultural area of Germany. According to these statistics Germany contained at the end of the last year, 55,000,000 acres of arable land. In addition there were 25,000,000 acres of meadow land, 580,000 acres of garden, and 320 acres of vineyard. Of the whole area of the country 26 per cent. is forest, and 7 per cent. roads, lakes, rivers, and waste land. Of the arable land last year, 4,200,000 acres were sown in wheat, and produced 12,000,000 qr.; 15,000,000 acres sown in rye, produced 175,000,000 bush.; 4,000,000 acres of barley produced 10,000,000 qr.; 9,000,000 acres of oats produced 25,000,000 qr.; and 6,500,000 acres of potatoes, 47,200,000 tons.

MYER STERN has written from a small town of Germany, on the subject of Jewish agricultural colonies, giving some pertinent information gathered by him in his travels. In Russia he says that many villages have been laid out expressly for Jews who follow agriculture, and for seventy years they have there conducted farming successfully and contentedly, the men tilling the soil and raising the crops, and the women taking care of the cattle. An eminent Rabbi of Buda Pesth, informed Mr. Stern that thousands of Jews are farming in Hungary, and that there are thick settlements of them in Marmaros. Beregha Constat, and the region of Ugoza, some being quite wealthy, and all making honorable livelihoods. They are very religious, and strictly keep their Sabbath and holidays. They are also orderly citizens and prompt tax-payers.

A COMPROMISE.—A citizen driving in on the Holden road the other day met a lad about twelve years old on the highway some six or seven miles from the city. The boy had a shot-gun as long as himself, but no game, and the citizen inquired: "Out for a hunt?" "I was out for a hunt," was the reply. "And haven't you killed anything?" "Well, no" "And you don't expect to?" "Not unless I hit within striking distance. You see, two of us came out together. After we got out here I wanted to hunt for lions and the other boy wanted to shoot ostriches and so we divided up. He took the powder and shot and I took the gun. I'm over here looking for turnips and he's over in that field watching a holler log for bears. It's such hot weather I guess we won't have much luck, anyhow."—*Detroit Free Press*.

### Meeting of the Executive Committee of the National Association of Millers.

The Executive Committee of the National Millers' Association had a brief session at the Plankinton House Oct. 15th. Only routine business, such as the allowance of accounts, such as regulating assessments, etc., came up for consideration. The gentlemen present were Geo. Bain, of St. Louis, President of the Association; John A. Christian, Chairman of the Committee; Alex. H. Smith, of St. Louis; J. A. Hinds, Rochester, N. Y.; C. H. Seybt, Highland, Ill.; J. R. Serrin, Ladora, Ia.; R. L. Thompson, Terre Haute, Ind.; Ed. Sanderson, Milwaukee; S. H. Seaman, Milwaukee, and H. F. B. Mills, Minneapolis.

C. R. Knickerbocker, the owner of the Cochrane patents, and R. L. Downton and Tom Miller, of St. Louis, of Downton Roller fame, were also in the city.

The following is an abstract of the proceedings: The first matter of business was the presentation of a report showing the receipts and disbursements during the year ending with the 15th of May last. The Receipts were credited to the following sources:

Illinois Association.....	\$ 9,843.22
Indiana Association.....	2,705.00
Kansas Association.....	3,320.00
Maryland Association.....	100.00
Michigan Association.....	5,275.00
Minnesota Association.....	4,407.00
Missouri Association.....	20,912.29
Nebraska Association.....	6,989.44
New York Association.....	293.00
Ohio Association.....	12,757.64
Wisconsin Association.....	3,164.00
Unorganized States.....	11,708.65
Total.....	\$83,375.20

The disbursements during the same period were \$81,801.61, leaving a balance in treasury of \$1,473.29. S. H. Seamans' the present treasurer, reported that since May he has received \$6,812 from the different associations, which, deducting the disbursements, leaves \$3,989.04 on hand at date.

#### THE TOLEDO APPORTIONMENT.

The next business was in relation to a basis for settlement with the several State Associations; whether the Toledo apportionment should be adhered to, or whether the settlement should be made on the actual number of runs represented in each State organization.

After considerable discussion, participated in by all present, the following resolution, offered by Alex Smith, of St. Louis was unanimously adopted:

Resolved, that regardless of the Toledo apportionment the actual number of full paid runs shall be the basis of settlement of each State with the National association on all assessments prior to May 15, 1879.

Also the following on admission of additional members offered by C. H. Seybt, of Illinois.

Resolved, that additional mills may be admitted to the National association on the following basis: All mills that were put in operation prior to January 1, 1879, that have used purifiers for cleaning middlings, thereby receiving the same benefit from the defense of the Cochrane suits obtained by old members shall pay the same amount paid by them, viz.: \$25.00 per run assessment prior to May 15, 1879, and assessments for current year. Mills not heretofore using purifiers, new mills and additional run put in by old members may be admitted by paying assessments for current year only.

#### THE DENCHFIELD SUITS.

Mr. Hinds reported in regard to the defense of the Denchfield suit that Mr. Harding had spent some time at Rochester taking testimony, and had had a full-sized Cartier model put in the Arcade mills, and run one month side by side with the Denchfield. Messrs Ayers and Ashton, two practical millers, took samples and made thorough tests. They found that the Cartier model took much less dust into the dust room, while the stones ground equally well, leaving the curb as dry and the meal cooler. In the Crescent and Pentecost mills the attachment was made to the curb, when not more than one-quarter as much material was carried to the dust room as was taken out by the Denchfield used in the same mills. Mr. Harding feels very confident of the justice and sufficiency of the defense, and says he is nearly through with taking testimony.

Letters were read from Judge Harding, stating that the case of Herring et al. vs. Gage & Co. (Denchfield patent), also the cases A. M. P. Co. vs. Atlantic Milling Co., also same vs. John A. Christian et al., had been appealed to the Supreme Court, and that a notice had been received from Mason that a motion would be made before the Supreme Court, and at an early day for the advancement of the latter cases on the docket.

Itemized bills were also presented by Mr. Hinds from Judge Harding for expenses in connection with the Denchfield suit, testing models, taking testimony etc., amounting to \$1,525.66. After a careful reading by the secretary, they were audited by the executive committee and ordered paid. The secretary was also instructed to make a remittance from the balance in the treasury to Judge Harding on account of services.

#### NEXT CONVENTION.

The matter of the next annual convention was then taken up and discussed at considerable

length. Mr. Smith, of St. Louis, thought that the millers of the United States ought to get up an exhibition that would reflect honor upon the business interests of this country. He suggests that some large building might be obtained in a central locality. Perhaps the exposition building at Chicago might be available. Ample power supplied and the mill machinery men of the United States and Europe be invited to show their machinery practically working. Ovens built for baking and testing flour, and millers invited to bring samples from their mills and bakers to test them, while flour dealers and consumers from the United States and Europe could have an opportunity of meeting the manufacturers, and testing samples from all parts of the country, thereby opening an acquaintance that could not result otherwise than beneficially to all parties.

President Bain thought that arrangements could be made with transportation lines, both sea and inland, to return free members of the association in this country and members of the association in Europe; also flour machinery for exhibition, and two weeks' time spent exceedingly profitable to all parties. Diplomas could be awarded both for machinery and flour of merit, thereby making it a practical benefit to successful exhibitors. Mr. Seybt, of Illinois, said such expositions were held in Europe, resulting in great advantage to all parties. After some further discussion, motion was made by Mr. Seybt that the secretary be instructed to open correspondence with mill machinery and flour men in this country and Europe in relation to holding such an exposition for two weeks, say at Chicago, June, 1880, and with some of the business men of Chicago, in regard to the Exposition building. Unanimously carried.

On motion of J. R. Serrin of Iowa, the president was instructed to appoint such committees as may be necessary to carry on this work successfully, also such committees as may be necessary to make awards on the various exhibitions.

President Bain and Alex. H. Smith of St. Louis, were appointed a committee to visit New York and Washington to arrange for half fare for visitors and exhibitors of machinery from Europe; also for receiving such machinery under bonds without cost for duty.

Several members had intended to take the afternoon train for Oconomowoc, for a season of fishing, but abandoned the scheme.

ULSTER COUNTY MILL STONES.—The industry of quarrying mill stones along the Shawangunk mountains, in the vicinity of Alligerville, N. Y., and through that section for a number of miles, has become quite a large business. These stones in some cases are very large, often measuring in diameter from 5 to 6 feet, and weighing as much as 4 tons. After being lifted from the quarry, they are rounded by workmen, and a hole drilled through the centre for the axle. They are extremely hard and flinty, so that the hardest kinds of instruments have to be used in working on them, which work is done entirely by hand with the hammer and point. The ordinary tools used in the bluestone business would be pointless after one or two clips on this hard, gritty rock. They are principally shipped from Alligerville. These stones are mostly used for grinding in grist mills, and for grinding cement. Three of these stones recently quarried about two miles from the bank of the canal, are enormous, measuring, after being rounded, 6 feet in diameter and 20 inches thick; they weigh 4 tons, and it required a great deal of labor to get them from the quarry to the dock, owing to the softness of the road bed, the wheels of the wagons cutting in to the hubs every little distance. The roads will have to be considerably improved if this business continues to increase.

THE Pioneer Press, of St. Paul, Minn., states that there are now building at the Falls of St. Anthony, five large flouring mills, of which one will probably make from 2,500 to 3,000 barrels a day, another 1,000 to 1,200, and the others from 500 to 800. In addition to this, Gov. Washburn is tearing out the inside of his old "B" mill in order to put in improved machinery, so that when completed it will have a capacity of from 1,500 to 2,000 barrels. It is worthy of note, in this connection, that it is but a little while since a 300 barrel mill was considered a large one, and 500 barrel mills were rare. The *Press* estimates that when all the new mills are finished and running on full time, the daily production of flour will be over 12,000 barrels, which, with the mill-stuffs made, will load seven trains of twenty-one cars each. At this rate the yearly production will be over 8,000,000 barrels, requiring 15,000,000 bushels of grain.

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(Translated from the German of Dr. Herman Klencke expressly for the UNITED STATES MILLER.—cuts reproduced by our special engraver from the original.)

[Continued from October number.]

A mixture of wheat-flour and vetch-meal will furnish a gray mass of gluten having the distinct flavor of legumes, which remind us of that of bitter almonds, leaves a grayish-brown bran on the sieve, and, when dried, the dough is of a greenish-black color. Wheat-flour mixed with the flour of the white bean will also yield a gray mass of gluten, which leaves a reddish-brown bran on the sieve; when dried the gluten becomes of a reddish color. In regard to the degree of the changing influence on the gluten of the grain, the legumes range as follows: Phasels or French beans, white beans, lentils, peas, vetches. We must yet mention a method of examination applied by Lecame, by which it is possible to detect a very small admixture of the flour of legumes. After a dough has been made of the flour which is to be examined, in a linen cloth, and while a jet of water is flowing over it, the smell of it, the greasy, soiled appearance which it might have, as well as the soap-like condition which the water that has drained off may be in, and the greater or smaller tenaciousness and ductility of the residuum of gluten are observed. The water that had been used for washing it out is collected, stirred, so that the particles that had settled are again mixed with the liquid strained through a fine hair sieve, so as to retain the particles of gluten that are still left, and now the liquid is divided into two portions. One portion of it is left untouched in a temperature of 18° to 20° C., so as to ascertain whether it will pass into a state of alkalescence, which would prove that this water contains particles of flour of legumes, while grain-flour, after having been deprived of its gluten, will not pass into a state of alkalescence, but into that of acidification, and acquire the smell of sour milk. The other portion of the liquid is diluted with water, so as to facilitate its filtration and the precipitating of the finely distributed substances in it and is then also left untouched. To retain the sediment, the liquid is then poured off partly, and we will this portion A, and the sediment remaining, B. The liquid A is now again filtrated and carefully concentrated by evaporation over a spirit-lamp until a fine, yellowish, and transparent skin is seen on its surface; it is then allowed to cool off, again filtrated so as to separate the small flakes of albumen obtained, which are contained in all kinds of flour, and then a very small quantity of acetic acid is added to it by drops. If any legumine (the caseous peculiar component of legumes) is present, a white flocculent sediment is formed in the liquid which, when collected and washed out and brought under a microscope, will appear like small leaves, crenated archwise at the rim, which are colorless, scentless and tasteless, and when dried become horny. Iodine-water will not color them; they are indissoluble in alcohol and in cold and warm water wherein they do not even become jelly-like; in ammonia and water containing petash, however, they will dissolve very readily and may again be precipitated therein by muriatic, nitric, acetic, oxalic, or citric acid. By cooking them in water for some time the above-named leaflets, however, lose their solubility in ammonia. The sediment B has meanwhile separated into two very unequal parts; some of

the smaller portion, after it has been carefully diluted with water on a glass plate, is brought under a microscope, and the net-like textures of legumes (see Fig. 22) are looked for. If a little of solution of iodine is added to it, the starch particles therein will be colored blue, but not the texture, which appears web-like; a solution of kali (to 1-10 parts) or muriatic acid (diluted with the same quantity of water) deprives this texture of its starch-meal. The other larger portion of the sediment B is now, after it has been put into water, left alone until the larger starch particles have settled; the portion settling quickest because it contains the richest and largest particles of the starch, is examined with the microscope. The characteristic particles of legumes are easily discerned, and we refer to our engravings of the same. They are especially remarkable by showing a simple or double or longitudinal furrow or star-shaped fracture when saturated with water, which generally disappear when they have been dried, and reappear when they are again moistened, while an admixture of iodine-water, of kali or diluted muriatic acid will not produce any change in this phenomenon. Those particles which will float longest in the liquid of the dissolved sediment B are remnants of the cellular tissue, and in them we also meet with the suspicious traces of the flour of legumes. If a net-like cellular tissue consisting of six sided meshes is now found beside the longitudinally furrowed or star-shaped particles of starch, and if there is legumine in the liquid, there can no longer be any doubt that flour of legumes formed a component part. If the cellular tissue observed under the microscope is colored a bright red by diluted muriatic acid (1 to 3 or 4 parts of water) this indicates an adulteration of the flour by white beans, vetches or lentils; if the color does not change, there was an admixture either of phasels or French beans or peas. Similar to the different per cent of ashes contained in grain-flour, the ashes have also been taken as a sign of adulteration by flour of legumes. We have already mentioned above that 5 g. of fine bolted wheat-flour dried in a temperature of 100° C., and then burnt, will yield about 0.045 g. of ashes. We may consequently say: Wheat-flour will yield from 8-10 to 9-10 of one per cent of ashes to the utmost. But the bolted flour of white beans and peas, when likewise dried in a temperature of 100° C., will yield three per cent, so that when added to the wheat-flour, it must greatly increase the contents of ashes of the same. Lorryet has proved that an admixture of 10 per cent of the flour of white beans to the wheat-flour is fully sufficient to double its contents of ashes. But the nature of the ashes themselves is changed by the admixtures named. Chemistry furnishes many fine investigations to that effect, which we need, however, not mention here for our special practical purposes. The chemist Fresenius has also discovered the modes of examinations by which differences in the ashes may be proved by general phenomena of reaction. So the ashes of grain, flax, and hemp (which contains bi-based phosphate) for instance, when dissolved in water, will form a white sediment when a few drops of nitric silver are added, which even when exposed to the light for several days, will not become changed. The ashes of legumes, however, (also those of siliquose plants and pines) which contain hydrochloric alkali and tri-based phosphates, will form a yellow sediment when the same has been added to them. When grain-flour is mixed with the flour of legumes, the ashes, when dissolved in water, will form a pale yellow sediment, after nitric silver has been added. Besides, the ashes of bolted wheat-flour are dry and vitreous, and will not change when exposed to the atmosphere; dissolved in water they are slightly alkaline, as may be observed with lacmus paper, while test paper shows no reaction. An admixture of 12 per cent of the flour of white beans, however, is sufficient to produce a change in the ashes, making them deliquescent, and when dissolved in water react alkaline to such a degree that it may be seen immediately with the above-named reactive papers. But flour is also often adulterated with mineral substances, so as thereby to increase its weight and quantity. Fortunately this deception may easily be detected. It does not occur unfrequently that lime, gypsum, baryta, common salt, bone dust, China clay, loam, etc., are mixed with the flour. The specific weight of the different kinds of flour serve as nearest guide. The several kinds of flour dried in a temperature of 100° have the following specific weight:

Wheat-flour..... 0.60—0.62  
Rye-flour..... 0.53—0.55  
Peas-meal..... 0.57—0.59  
Bean-meal..... 0.59—0.60  
Potato-flour..... 0.73—0.75  
Wheat-starch..... 0.66—0.68

The specific weight may be found by filling a flask, holding 50 grains, with well dried flour, care being taken to shake, but not to press down the flour. The weight received is doubled to get the percentage. So, for instance, the flask will hold exactly 30 to 31 g. of wheat flour, which, on a basis of 100 g., would make 0.60—0.62 g. The chemical examinations are as follows: Since the adulteration of grain-flour with mineral substances for the purpose of increasing its weight has been carried on very extensively of late, especially in the country on the Rhine and in Westphalia, and since the flour adulterated mostly in this way is imported thither from Holland, and even the substances used for the adulteration are introduced from there in great quantities under a fictitious name, professional chemists, especially those having much to do with the official inspection of seized suspected flour, have tried to discover means of enabling them to examine accurately greater and more numerous quantities of flour in the shortest time possible, particularly since a certain quantity must often be tested within only a few hours. The method hitherto customary to obtain the ashes by incinerating the flour, and then to analyze them, is, to be sure, circumstantial, and requires much time, since from 10 to 15 g. of flour must be burnt for every examination, which must be done in a vessel of platina that is often too small for such an amount, and so H. Vohl has stated a method according to which an adulteration of the flour with minerals (mostly gypsum, baryta, China clay, carbonate of lime, pulverized quartz, (silex) etc.,) can be determined with accuracy within a quarter of an hour. His method is based upon burning the flour that is to be examined and detonizing it by means of pure nitrate of potash (free of sulphuric acid). If pure wheat or rye-flour is carefully mixed with double its weight of pulverized nitrate of potash and brought to detonation in a capacious vessel of platina, a melted mass will be produced which contains no trace of carbon, and, after having cooled off, has a more or less faint yellowish-green color that is due to the contents of manganese, which is always present in the ashes of grain.

[To be continued.]

**Poisoning by Mouldy Bread.**

Some time ago, two persons out of eight who had eaten a portion of a bread pudding in a dining establishment at Bransley, died, and the deaths were naturally the subject of an inquest. Mr. A. H. Allen, a public analyst, testified that he had examined the liver and kidney of one of the victims, and the liver and lungs of the other, without finding any trace of poisonous metal. The material used in making the pudding has been carefully examined with negative results. The glaze of the basin in which the pudding was cooked had been found to be free from lead or other poisonous metals. The pudding had been very carefully examined and no deadly poison had been detected. The negative results of the chemical examinations for various metallic poisons had been borne out by the failure of either pudding to produce purging or other poisonous effects on a puppy which was fed on the suspected pudding for two whole days. There are not a few cases on record of irritant poisoning and death being produced by mouldy bread. Thus, horses have been killed in a short space of time after eating such bread in their ordinary food. The symptoms were those of an irritant poison. In 1829 an investigation was made in France into the cause of illness due to eating bread, and it was found, by experiment, that bread in a particular state of moldiness or decay may not only produce symptoms of poisoning, but actually cause death; and it was impossible to distinguish the harmless from the dangerous kinds of mould. As fungi grows very rapidly, it is quite possible for mouldy bread to be quite poisonous at one date and to have lost its poisonous properties two days afterwards. One of the most poisonous of these fungi is ergot, which produces symptoms very similar to those occasioned by the pudding, and the reports of the evidence in the present case have caused an eminent toxicologist to express a very strong opinion that the presence of this fungus was the cause of the poisoning. The witness stated further, that from experiments and observations he thought it clearly shown that the pudding contained a substance which resembled ergot in all its chemical reactions. The pudding was made of bread said to be mouldy, and which was several weeks old and had been in contact with ham, butter, and miscellaneous scraps. Mr. Allen then submitted extracts of letters from the leading toxicologists of the kingdom whom he consulted on the subject, and all of whom agreed with him in his opinions as set forth above.—London Miller.

**Official List of Members of the Millers' National Association.**

By request of Mr. F. B. Mills, Assistant Secretary of the Millers' National Association, we publish the following carefully revised list of the members of the Association, together with the number of runs of stone represented by each firm. We have taken especial pains to make the list a true copy of the list furnished us by Mr. Mills, and the list as given below is the only accurate one which has so far been published. The list is given by States and places, alphabetically arranged:

**ILLINOIS.**

Names of Members.	No. Run.
D R Sparks & Co, Alton.....	6
S N Turner & Co, Alton.....	10
Dean Bros, Ava.....	3
J Banjau & Co, Beardstown.....	3
Crown Mills Co, Belleville.....	6
F A Reuss & Co, Belleville.....	5
Knoebel & Co, Belleville.....	3
B F Switzer & Co, Belleville.....	5
Meyer & Guye, Belthalo.....	11
T J Cox & Co, Bloomington.....	8
H L Halliday, Cairo.....	14
Chas Galigher, Cairo.....	7
J M Stewart & Co, Carlyle.....	3
J A Carpenter, Carpenterville.....	4
W P & M R Thayer, Chatham.....	3
H C Cole & Co, Chester.....	8
Clinton, Briggs & Heermans, Chicago.....	15
Norton Bros & Co, Chicago.....	9
Weyerhauser & Co, Coal Valley.....	2
Thomas Koenigsmark, Columbia.....	3
Henry Huch, Columbia.....	4
A L Lovell, Cortland.....	2
W T Crow, Cotton Hill.....	1
M M Wright & Co, Danville.....	6
D S Shellabarger & Co, Decatur.....	4
Geo Priest & Co, Decatur.....	4
Stubbs & McKinstry, Delavan.....	3
Becker & Underwood, Dixon.....	10
Frank Neibauer, Dongola.....	2
Chas Hezel, East St Louis.....	5
Alt, Bowen & Co, Effingham.....	2
Vandyke & Gift, Eureka.....	3
N & W Sauer, Evansville.....	4
W H Wildeman, Freeburg.....	4
Webster & Rhodes, Freeport.....	2
P & A P Goddard, Freeport.....	2
Fred Graw, Fullersburg.....	2
Wm Bell & Co, Galena.....	3
Bennett Bros & Co, Geneva.....	7
Spreche & Scheuman, Germantown.....	4
Wm H Davis, Glasford.....	3
J M Allen, Grafton.....	3
Lanterman & Stewart, Grayville.....	4
Henry Hermann & Co, Highland.....	5
D Suppiger & Co, Highland.....	4
Collins & Gathmann, Homewood.....	3
Wm Brownlee, Irvington.....	3
Fitzsimmons & Kreider, Jacksonville.....	6
Jas McGrew, Kankakee.....	9
Jos Mueller & Co, Lebanon.....	6
Valier & Spies, Marine.....	5
Phil Postel & Co, Mascoutah.....	7
J Schindler & Co, Mascoutah.....	5
Ironmonger & Co, Mason City.....	3
N P Tinsley, Macomb.....	3
J Trull & Son, Macomb.....	3
L H Bradley, Mendon.....	4
J Johnson & Sons, Milan.....	3
Yantis & Corey, Murphysboro.....	3
John Huegely, Nashville.....	8
Chas Tiedemann, O'Fallon.....	8
Robt Byers, Olney.....	4
Welty & Wilson, Olney.....	3
N G Fahs, Olney.....	2
B F Hill, Paxton.....	3
Jno Stoltz & Co, Pekin.....	3
C P Chapman & Co, Pittsfield.....	4
F W Brickey, Prairie du Roche.....	4
Crossley & Halloway, Princeton.....	5
Sower Bros, Princeton.....	4
Dick & Bros, Quincy.....	6
H S Osborn & Co, Quincy.....	4
Leonhardt & Fisher, Red Bud.....	4
P B Brickey, Red Bud.....	4
Cole, Cooley & Co, Richmond.....	3
J G Chick, Rockford.....	3
D B Sears' Sons, Rock Island.....	8
Woodward & Davis, Shelbyville.....	4
Karme Bros, Shoal Creek.....	3
Jas Gordon & Co, Sparta.....	5
Sparta Steam Flour Mill Co, Sparta.....	4
Jno C Boyle, Sparta.....	4
Broker & Kern, Springfield.....	3
W R Grimsley, Springfield.....	3
Woodward & Dwight, Staunton.....	8
J Sykes Wilson, Sterling.....	1
Church & Patterson, Sterling.....	12
A Fredenhagen, St Charles.....	3
Johnson & Van Brimmer, St Elmo.....	3
Baer & Peeler, St Jacobs.....	4
C Eisenmayer, Summerfield.....	7
W C Black & Co, Sycamore.....	3
Andrew Eisenmayer, Trenton.....	6
K Ewing & Co, Trenton.....	4
Wm Donaho, Troy.....	3
J M Parke, Vera.....	4
E Lambe, Warrenville.....	2
Chouteau & Edwards, Waterloo.....	10
Total runs of buhrs.....	459
Total number of firms.....	98

**INDIANA.**

James Wellington, Anderson .....	3
J Shindler, Attica.....	2
Elkhorn Mill Co, Boonville.....	3
McDaniels Bros, Brooklyn.....	2
Gaff & Thomas, Columbus.....	6
N Gullet, Dillsborough.....	1
Elkhart Milling Co, Elkhart.....	3
John A Thompson & Co, Edinburg.....	4
Henry Brand, Eugene .....	3
Elles & Knauss, Evansville.....	5
Iglehart Bros, Evansville.....	2
Brose Bros, Evansville.....	2
Robt Ruston, Evansville.....	5
Jno W Laubscher & Co, Evansville.....	2
Jno Off, Ft Wayne.....	5
J C Pfeiffer & Co, Ft Wayne.....	4
Hoagland & Tressell, Ft. Wayne.....	4
W A Thomas & Co, Goshen.....	4
Callender & Dunn, Greencastle.....	2
C R Cooley, Hartford City.....	2
Gibson & Co, Indianapolis.....	11



Fig. 22. Net-like textures of legumes in flour.

## THE UNITED STATES MILLER.

Eckert Bros, Jasper.....	2½	B H Wheeler & Sons, Blissfield.....	2	H C Waite, St. Croix.....	7	N & H A Clark, Pike.....	1
Breckenridge & Jenkins, Lafayette.....	5	Albright & Thompson, Brighton.....	1	F Arnold, "	6	Hartwell, Winslow & Co, Plattsburg.....	4
N Weber, Laporte.....	3	Brough & Pears, Buchanan.....	2	Wm Lindeke, St Paul.....	3	Robert Wood, Potsdam.....	2
Geo. Cecil & Co, Logansport.....	7	J C Hermance, Coopersville.....	1	Sackett & Fay, St Peter.....	3	Allen Babcock, Raymondsville.....	1
Wm Trow & Co, Madison.....	9	Champion, Adams & Co, Detroit.....	4	Williams, Fall & Co, Whalen.....	9	Farley, Furgeson & Wilson, Rochester.....	5
J R Meyers, Middleburg.....	2	Geo Sowden, Detroit.....	6	Meriden Mill Co, Willmar.....	2	A Hunter, now Chicago, Ill, "	4
R D Roberts & Co, Monticello.....	3	Henkell & Voorhees, Detroit.....	6	C H Paine, Winnebago.....	2	W S McMillan & Co, "	6
J E Loughry & Co, Monticello.....	4	Evarts & Co, Dexter.....	8	L C Porter Milling Co, Winona.....	6	Wilson & Pond, "	6
Pfeifer & Tresselt, Mt Vernon.....	3	Jesse Hoyt & Co, East Saginaw.....	4	Miller & Ellsworth, Winona.....	6	J A Hinds,	6
Ford & Corbin, New Harmony.....	5	Colwell & Adams, Frentont.....	5	Akerman Bros, Young America.....	6	Chase, Bristol & Veile, "	5
Evans & Sohl, Noblesville.....	2	Hibbard & Graff, Grand Rapids.....	6	Total runs of buhrs.....	609	Moseley & Motley, "	5
W W Scott, Noblesville.....	2	Barlow & Goodyear, Hastings.....	3	Total number of firms.....	110	Davis, Jennings & Co, "	6
J F Katterjohn, Polk Patch.....	1½	F W Stock, Hillsdale.....	8	MISSOURI.		Joseph Cowles, "	4
Jos Crawford & Co, Richmond.....	3	Martin Stiff, Holly.....	5	Sombart Milling & Mfg Co, Booneville.....	3	John R Pentecost, "	6
L A Niblock & Co, Rockport.....	2	Stiff & Sharick, Ionia.....	2	Theo Haberecht.....	2	Elwood & Armstrong, "	3
Jos Banholzer & Sons, Shelburne.....	3	A A Hayden, Jackson.....	2	J F Lawton, Carrollton.....	2	Jas Wilson & Co, "	6
Wm Paddock & Co, Terre Haute.....	8	Merrill & McCourtie, Kalamazoo.....	2	Cowgill & Hill, Carthage.....	3	Boardman, Sherman & Co, "	5
Kidder & Co, Terre Haute.....	6	Israel B Hyatt, Linden.....	2	Conger, Pilsan & Hunt, Centralia.....	2	Gerling Bros, "	2
R L Thompson, Terra Hante.....	13	Hale Bros, Lyons.....	3	Geo Milbank, Chillicothe.....	2	N D Nobles & Co, Shelby Centre.....	2
Emerson & Callender, Vincennes.....	3	John Hurd & Co, Marshall.....	8	Clifford, Roberts & Co, Clarksville.....	2	Howes, Babcock & Co, G P Kellogg & Co, Silver Creek.....	3
Jos Pollock, Vincennes.....	8	S G & S D Taylor, Memphis.....	2	Reihl & Brannan, Clinton.....	4	Hunley, Holcomb & Heine, Silver Creek.....	4
Bates Bros & Co, Winchester.....	3	T D French, Middleville.....	5	J C Yantis, Fulton.....	4	J Thayer, & Co, Skaneateles.....	4
G W Browning & Co, Worthington.....	2	W K Lacey, Niles.....	4	Harrison, Marr & Co, Glasgow.....	5	Jacob Amos & Sons, Syracuse.....	7
KENTUCKY FIRMS IN INDIANA.							
Smoyer & Milton, Louisville, Ky.....	10	Badger & Barnard, Niles.....	5	Carter, Pindell & Co, Hannibal.....	5	E E Hanaman, Troy.....	5
W L Murphy, " "	5	Dewey & Stewart, Owosso.....	5	Bennett, Carter & Co, "	5	Munson Bros, Utica.....	2
Gripp, Jones & Co, " "	4	E O Briggs & Co, "	5	Pindell, Bro & Co, "	3	J B Enos & Co, Waterford.....	7
Total runs of buhrs.....	207	H H & D F Lantz, Plainwell.....	3	Waggoner & Gates, Independence.....	4	Heamer & Halstead, Waterloo.....	7
Total number of firms.....	48	Jas Newman & Co, Portland.....	4	J A Dewar, Kansas City.....	4	A H Herrick, Watertown.....	2
IOWA.							
Wm Roosevelt, Ackley.....	2	R B Smith, Portland.....	4	P G Wilhite, "	4	Shead & Graves, "	3
C A Bryan & Son, Agency City.....	2	Lee & Wells, St Joseph.....	5	Hoag & Brigham, Kirksville.....	5	Thos O Wolf, West Farm.....	5
Jones & Richards, Algona.....	2	Heck & Co, Tecumseh.....	2	J N Denison & Sons, Knob Noster.....	6	Total run of buhrs.....	379
J Mathews & Son, Anamosa.....	1	Woolston Comfort, Tecumseh.....	3	Henry Lawrence & Son, Lawrenceton.....	6	" number of firms.....	88
Meyers & Wescott, Baeger Hill.....	1	Wm Hayden, Tecumseh.....	2	O H Corbin & Co, Liberty.....	2		
Knight & Smith, Boone.....	3	John W Hoffman, Three Rivers.....	2	Robt Nethercott, Louisiana.....	2		
T J H Reed, Boone.....	2	Roe & Crocker, Union City.....	4	Wm Pollock & Co, Mexico.....	2		
Chas Gray, Butlerville.....	2	D P Hamilton, White Pigeon.....	2	Guthrie & Co, Miami.....	2		
Robert Nicholson, Carlisle.....	4	Keppel & De Roc, Zeeland.....	2	Jno F Roberts, Napoleon.....	2		
L F Day, Castana.....	4	Total runs of buhrs.....	181	Conrad, Jordan & Co, Nevada.....	2		
G W Miner & Co, Cedar Falls.....	1	Total number of firms.....	46	C Mispagel, O'Fallon, "	2		
Rhodes & Dayton "	5	MINNESOTA.		D Runkel & Son, Oregon.....	2		
W S Cooper, Cedar Rapids.....	4	Buswell & Horne, Afton.....	2	McDowell, Stanton & Co, Pierce City.....	2		
W D Watrous & Co, Cedar Rapids.....	2	Wm Wilson, Alden.....	2	Metzger & Co, Platte City.....	2		
S M Leach, Clermont.....	3	W D Washburn & Co, Anoka.....	2	J P Hamacher & Bro, Richmond.....	2		
Williams, Dentler & Ohlschager, Cromwell.....	2	Engle & Co, Austin.....	2	Armstrong, Miller & Clayton, Rockport.....	3		
H P Beattie, Davenport.....	6	J Gregson, "	2	Zimmerman & Harter, Sedalia.....	3		
Dow, Gilman & Hancock, Davenport.....	8	W H Officer, "	2	Jno Schmock, Springfield.....	3		
B C White, Des Moines.....	3	Mathew Gregson, Austin.....	3	J B Thro & Co, St Charles.....	3		
D A Tyrrell, "	3	Casper Kroenchaef, Benton.....	3	Martin & Co, "	3		
J E Townsend, DeWitt.....	2	Chas Espenschied, Cannon Falls.....	3	Meyer & Guyo, Ste Genevieve.....	3		
Donville Mill Co, Donville.....	1	Richard Gregg & Co, "	2	St Mary's Mill Co, St Mary's.....	8		
Schofield, Dunlap.....	1	J G Eitel, Chaska.....	2	E Goddard, Sons & Co, St Louis.....	2		
A C Tiedt & Co, Elkport.....	1	S G Dickson, Chatfield.....	2	H Kalbfleisch & Co, "	5		
Wm Rhoads, Fertile.....	1	Mills & Houlton, Elk River.....	2	Atlantic Mill Co, "	5		
Peters & Bernhard, Fort Madison.....	1	Greene & Gold, Fairbault.....	2	Empire Mill Co, "	5		
D L Motz, Guthrie.....	1	Walcott Mill Co, "	2	Geo P Plant & Co, "	4		
G F Weist, Guttenberg.....	1	W L Turner, "	2	Camp Spring Mill Co, "	3		
Jas A Taylor & Son, Humeston.....	1	R H Scott, "	2	Saxony Mill Co, "	4		
Hursch & Pritchard, Indianola.....	1	Hillger & Bingham, "	2	Sessinghaus Bros, "	4		
Milner & Kirkwood, Iowa City.....	1	D Underwood, Farmington.....	2	F L Johnson & Co, "	5		
Serrin & Co, Ladora.....	2	Kimball & Beedy, Forest City.....	2	Union Steam Mill Co, "	6		
W S Johnson, Lawler.....	2	R L Frazee, Frazee City.....	2	Pearl Mill Co, "	5		
Hammond & Benedict, Le Grand.....	1	Fred Keye, Frontenac.....	2	Yeager Mill Co, "	5		
A E & D H Kuntz, Lisbon.....	4	Andrew Friend, Garden City.....	2	Land, Fike & Co, Warrensburg.....	2		
Bailey Bros & Rush, Marengo.....	1	Albrecht Bros, Glencoe.....	2	J F Schweyermann, Washington.....	4		
J F Woodbury, Marshalltown.....	4	Cannon City Mfg Co, Granville.....	2	Conger, Bro & Co, Wellsville.....	1½		
Messmore & Lord, Moingona.....	3	Gardner & Mairs, Hastings.....	2	Total runs of buhrs.....	238½		
Eastman & Laird, Nashua.....	2	J A Ennis, "	2	Total number of firms.....	52		
Vestee & Co, New Sharon.....	3	Fred Voight, "	2	NEBRASKA.			
Jas A Lathrop, Nora Springs.....	1	White Bros, Hokah.....	4	J F Roll & Son, Ithaca.....	6		
Raymond & Painter, Osceola.....	1	Edward Thompson, Hokah.....	4	Kendall & Smith, Lincoln.....	2		
Jno H Warren, Oskaloosa.....	3	S C White & Co, Houston.....	2	W Lyons & Son, Lyons.....	3		
Eggleston & Stubbs, Polk City.....	2	Russell, Hineline & Co, Minneapolis.....	2	Fred Renard, Oakland.....	2		
J J Manker, Red Oak.....	2	Stokes, Kimball & Co, Janesville.....	5	Elam Clark & Son, Omaha.....	2		
Stinson & Bros, Riverside.....	1	F Nicolin, Jordan.....	2	Hill & Moore, Palmyra.....	1		
Smith, McBride & Co, Rose Hill.....	1	Foss, Wells & Co, Jordan.....	1	Wm Saunders, Unadilla.....	1		
Wright, Ray & Co, Shell Rock.....	1	Graff & Co, La Crescent.....	2	C C White, Valparaiso.....	2		
City Mill & Elevator Co, Sioux City.....	1	D J Cameron, La Crescent.....	2	Mann & Co, Wilder.....	2		
Spillville Mill Co, Spillville.....	5	White & Beynon, Lanesboro.....	2	Total runs of buhrs.....	18		
Shearer & Gray, Tipton.....	4	I White, Nash & Co, "	2	Total number of firms.....	6		
Abram Stanley, Union.....	1	Boston Elevator & Flour Mill Co, Lake City.....	8	NFW YORK.			
Durand & Kimball, Vinton.....	1	Prael & Cu Buisson, Mankato.....	5	Orlando Lewis, Auburn.....	4		
S Jack, Vinton.....	1	White, Beynon & Co, Medford.....	5	D Neyhart & Co, Auburn.....	4		
B Schwarting, Walcott.....	1	Minnetonka Mill Co, Minneapolis.....	2	G H & A T Hotaling, Baldwinville.....	4		
A Perry, Western College.....	1	H J G Croswell, "	5	Jas Fraze, Co, Binghamton.....	4		
Sharp & Johnson, Wilton.....	3	D R Barber & Son, "	10	Tonjes, Moller & Co, Brooklyn E D.....	11		
Vermillion & Klebeck, Winterset.....	2	Washburn, Crosby & Co, "	11	Jewell Bros, "	6		
Bauman, Cort & Co, Zwingle.....	2	Crocker, Fish & Co, "	11	F E Smith & Co, "	6		
Total runs of buhrs.....	145	Harmon, Holmes & Co, "	12	J T Noye & Son, Hiram Smith, Buffalo.....	5		
Total number of firms.....	50	S S Brown & Co, "	12	S W Howell, "	5		
KANSAS.							
Bowman & Kellogg, Atchinson.....	4	Stamwitz & Schober, "	4	Harvey & Henry, "	4		
Goodlander Mill & Elevator Co, Ft Scott.....	4	Herrick & Douglass, "	6	Schoelkopf & Matthews, "	6		
Woodward & Norton, Leroy.....	2	Hobart & Shuler, "	6	J B Griffin & Co, "	6		
Robt Atkinson Ottawa.....	2	Bull, Newton & Co, "	14	Thornton & Chester, "	6		
O W Baldwin, Ottawa.....	3	Zenith Mill Co, "	10	Geo T Enos & Co, "	7		
Shellabarger, Griswold & Co, Topeka.....	6	C A Philsbury & Co, "	50	E J Newman & Co, "	6		
Total runs of buhrs.....	21	J A Christain & Co, "	20	Leonard Dodge, "	2		
Total number of firms.....	6	L Day & Co, "	11	Lassell & Jewett, Canton.....	1		
KENTUCKY.							
J G Patton & Co, Catlettsburg.....	3	W H Hinkle & Co, "	5	Ingo G Williams, Dansville.....	8		
David Keefer, Covington.....	3	Croswell, Syme & Co, "	8	J T Standing, Deer River.....	3		
G B Macklin, Frankfort.....	4	Pratt & Baird, "	3	J C M Perrigo, Dryden.....	3		
Miles & Son, Frankfort.....	4	J A & L Christian, "	13	Rathbun Bros, Rochester.....	2		
D E Roberts & Co, Maysville.....	4	Cahill & Fletcher, "	12	C T Niles & Co, Fonda, "</td			

Gerlach & Dittmarsch, Milwaukee.....	9
E Sanderson & Co, ".....	30
J B A Kern, ".....	34
Seamans & Stevens, ".....	12
W C Durant, ".....	6
C Manegold & Son, ".....	18
J Schoeneman & Co, ".....	5
Nunuenacher Co, ".....	20
River Street Mill, ".....	9
Milwaukee Milling Co, ".....	18½
Dainton & Roth, Monterey.....	1
Stridde & Krueger, Neenah.....	3
J A Kimberly, Neenah.....	5
D S Kimberly, Neenah.....	3
Smith & Proctor, Neenah.....	4
W Albrecht & Co, Newburgh.....	2
Holt Bros, North Lake.....	2
Luck & Hathaway, Oconomowoc.....	2
Ed Schwarlenbach & Co, Oconomowoc.....	6
H C Gustavus & Co, Oshkosh.....	3
Foote Bros & Co, Oshkosh.....	3
Hotchkiss & Puhiman, Plymouth.....	3
Henry Kuntze, Poynette.....	1
R Stilling, Port Washington.....	3
J Farnechon, Prairie du Chien.....	3
W W Vaughn & Co, Racine.....	2
Parfrey & Pease, Richland Centre.....	7
J N Foster & Co, Ripon.....	3
Freeman & Stevens, River Falls.....	8
J D Putnam & Co, River Falls.....	3
Jno G Dixon, Riverside.....	1
Stewart Bros, Seymour.....	2
Heald & Riebel, Sheboygan Falls.....	3
George Sears, Shopiere.....	1
Philip & Clark, Stockbridge.....	1
Norris & Dow, Stoughton.....	4
Menler & Co, Thiensville.....	2
Charles Elver, Vermont.....	2
E Zahn, Vienna.....	3
Wm Boorman & Co, Waterloo.....	2
F Miller & Co, Watertown.....	10
Mower & Warren, Wauwatosa.....	2
Brown & Montague, Whitewater.....	2
Cooper & Wilkinson, Woneowoc.....	2
Total run of buhrs.....	45½
Total number of firms.....	97

## CALIFORNIA.

H G Smith & Co, Sacramento.....	7
Horace Davis & Co, San Francisco.....	14

Total run of buhrs.....	21
Total number of firms.....	2

## DELAWARE.

Wm Lea & Sons, Wilmington.....	6
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## DISTRICT OF COLUMBIA.

Geo Shoemaker & Co, Georgetown.....	3
W H Tenny & Sons, Georgetown.....	3

Total runs of buhrs.....	6
Total number of firms.....	2

## MONTANA.

G D Thomas, Gallatin.....	2
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## OREGON.

Salem Flouring Mill Co, Salem.....	7
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## SUMMARY.

States, etc.	No. Firms.	No. Runs.
Illinois.....	98	459
Indiana.....	48	207
Iowa.....	59	145
Kansas.....	6	21
Kentucky.....	5	17
Maryland.....	13	103
Michigan.....	46	181
Minnesota.....	110	669
Missouri.....	52	238½
Nebraska.....	9	18
New York.....	88	379
Ohio.....	22	120
Pennsylvania.....	13	57
Virginia.....	5	78
Wisconsin.....	97	451½
California.....	2	21
Delaware.....	1	6
District of Columbia.....	2	6
Montana.....	1	2
Oregon.....	1	7
Grand Total.....	678	3,186

## Preliminary Notes on the Non-coagulable Nitrogen Compounds Present in the Cereals.

(Read before the Society of Public Analysts.)

It has been pointed out by Church and others that the estimation of nitrogen for the purpose of calculating the albuminous matter present in vegetable products, is not perfectly reliable as a true measure of the flesh formers or albuminous matters properly so called.

All the cereals as well as roots, contain a considerable proportion of nitrogen combined in other forms which are not capable of being coagulated by acid, and which judging from inference have very little flesh forming power. This non-coagulable nitrogenous matter exists mainly in the husks or bran of the cereals—The flour when perfectly freed from husk, contains a comparatively small proportion of it. It is evident, therefore, that this may have led to some erroneous estimates of the relative feeding value of the whole meal, as compared with flour. It is quite clear that as regards whole meal, the nitrogen determination is not to be relied upon as giving an accurate estimate of the amount of flesh formers present.

I cannot at present specify the limits within which this determination may be trusted, although I have already made some 150 nitrogen determinations with this object, but the examinations already completed enables me to point out some facts of interest. Thus, I have taken some fifteen representative samples each of wheat, barley and oats. These samples have been ground, and the nitrogen in the whole meal determined in the ordinary way by the soda lime process. Another portion of the whole meal has been treated with a solu-

tion of carbolic acid, faintly acidulated with, say, two or three drops of dilute nitric acid, and after warming, standing, and filtering, the insoluble residue has been washed on the filter with carbolic acid solution. Since the true albuminoids are coagulated by this process, the residue on the filter will contain them all, while the nitrogenous matters which are present in other forms, whether as nitrogen salts or alkaloids, will pass through with the filtrate.

In order to determine the true albuminoids, the residue left on the filter after this process have been dried and detached from the filter, and the filter itself carefully cut up into small fragments and mixed with the residue, and the whole burnt in the ordinary way in the combustion tube.

Treated by this process, I find that the average of the fifteen wheats show that 17·7 per cent. of the total nitrogen is present in such a form that it is not capable of being coagulated by carbolic acid—that 17·6 per cent. of the total nitrogen present in the oats is also in the same form, and that 14·7 per cent. of the total nitrogen present in the barley is in the same form.

These, however, are only averages—there is considerable variations among the samples themselves. I find for instance, in one sample of wheat that the proportion of nitrogen present as true albuminoids, as distant from that present in non-coagulable form, was 95 per cent. of the total, this being the maximum percentage which I have at present found. While the minimum proportion yet met with was 74 per cent. The maximum proportion which I have yet found in oats was nearly 93 per cent., and the minimum proportion 57 per cent. The maximum proportion which I have found in barley was nearly 95 per cent., and the minimum about 70 per cent. The sample of oats which showed the very low figure of 57 per cent., was one of the worst samples of its class which I ever saw—it consisted almost entirely of empty husks.

Assuming, then, as I think I may, that these samples were really representative ones, I conclude that the flesh formers present in the whole meal of the cereals have been over-estimated to the extent of from 15 to 20 per cent., and that the residual nitrogen present in other forms is not equally valuable as a flesh forming constituent.

It becomes now of great importance to find in what state of combination this residual nitrogen does exist. There is no doubt that some of it is present as nitrates and nitrites; but at present I have not sufficient data to enable me to give the whole of the averages. I have obtained figures to show that the nitrogen in these two forms is part only of the residue quantity. Thus, for instance, in the case of barley, the largest proportion of nitrogen—in the form of nitrates, as determined by the aluminium process, which I have yet found—is .050 per cent., equal to .194 per cent. of nitric acid, and the lowest proportion yet obtained is .033, equal to 1·62 per cent. of nitric acid. In the first case the non-coagulated nitrogen was .140 per cent., and the proportion of it present as nitrates and nitrites therefore 36 per cent. In the second case the non-coagulated nitrogen was .061 per cent., and proportion of it present as nitrates and nitrites was 54 per cent.

In the wheat samples, as far as I have already finished them, I have found as a maximum .051 per cent. of nitrogen as nitrates and nitrites, and as a minimum .032 per cent. in the same forms. The samples contained respectively .101 per cent. and .120 per cent. of non-coagulable nitrogen. In these cases, therefore, the nitrogen present as nitrates and nitrites corresponds to 50 per cent. and 27 per cent. of the latter qualities.

In the case of another sample of wheat which contained .300 per cent. of nitrogen in non-coagulable forms, the nitrogen as nitrates and nitrites only amounted to .035 per cent., or less than 12 per cent. of that which is at present unaccounted for.

I am completing the examination of these samples in order to determine not merely the average proportion of nitrates and nitrites, but also the form in which the other combined nitrogen is present.—*The Analyst.*

THE Emigration from Nova Scotia to the United States and Manitoba has been very large this season.

TEAMS loaded with wheat fill the streets of Walla Walla, Washington Territory, daily. It is estimated that there are 2,000,000 bushels there yet to ship. The railroad is blocked, as the cars take the grain to Walla Walla faster than the boats can carry it off.

## Baltimore Flour Industry.

For at least one hundred years Baltimore has been the center of an important flour trade, which has continued to develop from year to year, until at present, when it forms one of the most extensive branches of our trade. Long before the fertile prairies of the West were teeming with hardy settlers, the surrounding States of Maryland, Virginia and Pennsylvania produced a large quantity of winter wheat, which has never been surpassed in quality. It is generally admitted to contain a much greater proportion of nutritious qualities than the spring wheat of Minnesota and other far Western States. Previous to the discovery of what is now known as the "Patent Process" of milling, spring wheat was worth considerably less than winter wheat, but by this process the millers of Milwaukee and other Western cities have been able to produce from it a very fine grade of flour, which has enhanced its value. The splendid water power furnished by the neighboring streams has largely aided in building up the milling industry. Many of our largest mills are situated near the edge of the city, where water is abundant, and where a large part of the grain used can be bought directly from the farmers. In 1872 the compulsory system of state inspection was abolished, and since then made voluntary by licensed inspectors, has been under the control of the Corn and Flour Exchange, and thus freed from all political influence, it has worked satisfactory to the trade. Baltimore flour is bought and sold exclusively by the millers' brand, and the inspection of such for years was altogether superfluous, besides entailing much extra labor and expense. The manufacturer is interested in maintaining the character of his brand, for any depreciation would naturally result to his loss.

In being the possessor of the "Patapsco," Baltimore is able to boast the oldest flour in the United States. In 1772 the firm of Ellcott & Co., the senior partner of which established what is now known as Ellicott City, began the erection at that place of a mill for grinding wheat into flour. In 1774 this mill was completed and given the name of "Patapsco," after the river on which it was situated. This mill is still in existence, and after changing owners several times and having many improvements added to it, is to-day our most extensive flour mill. When Ellicott & Co. had finished the "Patapsco," they could find no wheat to grind, and it became necessary for them to clear the surrounding woods and raise their own grain. The success attending their efforts first proved the value of Maryland soil for wheat, and with the crop then raised they laid the foundation for our city's flour trade. The "Patapsco" was owned and operated by the Ellicotts until the third generation, when in 1833 they failed, and the mill was sold to Shaw, Canby & Co., by whom it was conducted for one year. At the end of that time they made an assignment, and the "Patapsco" came into the possession of the Union Bank of Baltimore. In 1840 the mill was purchased by Charles Carroll, father of our present Governor, and by him operated until 1844, when he formed a partnership with the late C. A. Gambrill. Under the new firm the mill was run till the death of Mr. Carroll, which occurred in 1863. The property then remained in the Carroll estate until the flood of 1868, after which it was sold to Messrs. C. A. Gambrill, R. G. Macgill and P. H. Macgill. At the death of Mr. Gambrill, his interest was purchased by Messrs. Macgill, who are its present owners. The present "Patapsco Mill" was built in 1809, since when many improvements have been added. Since the death of Mr. Gambrill, the business has been conducted under the firm name of C. A. Gambrill & Co., the members of which now are R. G. Macgill, P. H. Macgill, A. Gambrill, G. C. Hilt, and H. C. Corner. The "Orange Grove Mill," situated at the station of the same name, about three miles above the Relay House, on the Baltimore & Ohio Railroad, is another extensive flour mill, owned by the same firm. These two mills have 45 run of stone, and an aggregate capacity of 200,000 barrels of flour per year. To avoid any stoppage from a short supply of water, steam was introduced a few years ago, and each mill now has a 200 horse-power Corliss engine, besides the water, which gives over 500 horse-power more. The "Patapsco Mills" brand is now the oldest brand of flour in the United States, being 105 years old. The brand has a national reputation, and is a favorite in all parts of the Eastern and Southern States, where it is largely used. On account of the interest attached to the "Patapsco Mills" from their venerable age, we have thus briefly traced their history.

Next in age to the "Patapsco" is the "Brooke Mill," which, while it has not reached its centennial, is still fast pressing on to that point, and may well be regarded as a relic of the past. It was established in 1795, and since then has, of course, experienced many changes in its proprietorship. It is now run by Messrs. Tyson & Bro., and holds the third place in our city as regards the number of burrs. In and around our city there are other mills which date back nearly half a century, and of those at present in operation there are very few that do not show the marks of age without, however bright and busy they may be within.

Baltimore, surrounded by a country which produces the finest wheat, has always maintained a high reputation as one of the most important flour markets of the world. The superior quality of winter wheat which is used by our millers, and which is raised in large quantities in Virginia, Maryland and Pennsylvania, has enabled them to produce the finest flour. The manufacturing capacity of our city is very great, and is surpassed by few cities in the country. Winter wheat, principally southern, although some from Ohio and Indiana is occasionally ground, is used exclusively by our millers, who, with two exceptions, work on what is known as the "New Process," and not the "Patent." These exceptions are the Paragon Mill, Messrs. Seavers & Anderson, where this process was introduced some five years ago, and the two mills of Messrs. C. A. Gambrill & Co., who lately introduced this "Process," and are working by it.

Considerable attention is paid to the manufacture of a high grade of "strong flour," suited to stand the warm climate of Brazil, to which country we annually export, of city and other local manufactured flour, from 250,000 to 300,000 barrels. About 50,000 barrels a year, destined for the same country, pass through our city from Richmond and Fredericksburg mills, several of which have agencies here.

The flour trade of Baltimore has long been one of our most important industries. When the Corn and Flour Exchange was first established, the bulk of trade conducted on its floor was in flour; and while the dealings in grain now surpass the flour trade, there has been no diminution in the latter. In 1878 the receipts of flour at our city were the largest ever recorded, amounting to 1,594,113 barrels, of which about 653,000 were of local grinding, while the residue was from Virginia, Maryland, Pennsylvania and the West. The receipts of city mills since the 1st of January show but little variation from the figures for the corresponding time in 1878. The amount of capital invested in milling in Baltimore, according to *Broadstreet's Commercial Agency*, is about \$1,345,000. The annual production of these mills represents a value of over \$3,000,000. At present there are twelve firms, all of which are old and honored names in Baltimore's commercial history, engaged in milling. The following is a list of the mills, with their locations and the number of buhrs running at present :

Name of Mill.	Location.	No. Buhrs.	Owners or Operators.





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**Spontaneous Fracture of Castings.**

Mr. T. Wrightson, in a paper recently read before the British Association, throws light upon the atomic changes that accompany the cooling and contraction of cast iron. He has been able to determine, by experimenting upon the pressure of buoyancy of an iron sphere immersed in a bath of molten metal, that the maximum density of cast iron occurs when cold, and that its minimum density occurs when in the plastic condition just before liquefying or solidifying. This result clearly indicates that after a casting has been poured into a mold, it expands in volume at the moment of solidification, and from that point the contraction and density of the metal proceeds very rapidly, until quite cold. In the case of the cast iron pulleys, then, the thin rim, presenting a large surface for radiation of the heat, and being also at the exterior of the mold, proceeds whilst cooling, first to maximum expansion, and then to contraction, without danger to itself, except from the rigidity of the mold, as the arms would be still in a plastic condition, and would offer no resistance to contraction. This allowance for contraction, in the non-rigidity of the mold, is usually so well understood now-a-days, that few breakages of castings occur on that account. The cores, subject to the compression of contraction, are duly constructed, in part of straw or other inflammable material, so as readily to give way under the contracting pressure of the casting.

The case is, however, very different with the arms of the pulley if straight. These, in the usual course, reach their maximum expansion, i. e., the moment of their solidification after the rim has contracted and set. The arms are thus "jumped" or shortened upon themselves, at this period, and after this point the contraction sets in rapidly. But the arm of a two-foot pulley, forming a straight diameter across, must now contract nearly a quarter of an inch in linear measurement, whilst each of its ends is securely held by the already rigid rim. A fracture in one of the arms to allow free contraction is the obvious result, and when one arm has parted, there will be no reason for the other in the same diameter breaking. In some cases a large portion of this irregular contraction may take place without fracture by the metal "drawing" in places, generally where the arms join the rim or boss. The formation of the arms of pulleys in an "S" shape is for the distinct purpose of avoiding this danger from irregular contraction. The "S" arm, not being a rigid diameter, is more or less capable of adapting itself, by a change of shape, to a smaller contracted dimension. It is, however, remarkable how many founders still neglect such a simple precaution even as that.

A similar case to that of a pulley, as described above, for a long time caused considerable trouble and expense to a manufacturing firm. The casting was a frame for horse gear, consisting of an outside square frame, with four diagonal ribs supporting the boss in the center. The castings almost constantly broke, either before leaving the foundry, after reception into the erecting shop, or after delivery to the customer, and always in the same manner. Each of the diagonals fractured across one of its ribs, thus plainly showing it was the result of internal contraction. Sound castings were afterwards easily obtained by observing the precaution to part the exterior frame into two distinct portions, so that they could freely give to the internal contraction of the diagonal ribs.

A case of much interest, causing a long and serious arbitration, arose from the fracture, amongst other causes, of the inner shell of a steam jacketed cylinder of large diameter. The cylinder had been cast in one piece with its jacket, and, apparently, had no particular care paid to its cooling in the foundry. The result, in the light of the foregoing explanations, was unavoidable. The external jacket being situated in an exceptionally good position for the radiation of its heat, naturally cooled long before the internal cylinder shell, which could only cool by radiation towards the core. When, however, the internal shell cooled and contracted, its ends were each firmly attached to, and formed a part of, the already rigid exterior jacket. The result was evidently a condition of extreme tension in the interior cylinder shell endeavoring to part from the exterior shell or jacket. The metal of the cylinder was exceptionally good, so the interior shell had been able successfully to withstand the very considerable tension, until after the engine had been put to work. Then the varying temperatures to which the cylinder was subjected, sometimes colder and some-

times at a temperature of about  $300^{\circ}$  F., at last caused the overstrained atoms of the interior shell to part, at one end around a portion of the circumference, and in the center around the other part of the circumference.

Embarrassing accidents frequently happen in the fracture of the valve boxes of deep-lift pumps, the castings here being peculiarly liable to irregular contraction. The remedies against such accidents are evidently two in number. First, to so construct the castings that its form shall be capable of yielding to such irregular contraction should it take place, and that the equal sections of metal used shall ensure uniformity in cooling; and second, to take such precautions in the foundry that the casting shall cool equally throughout by the artificial cooling of such parts as may naturally remain hottest the longest, or by the artificial heating of such parts as may cool too rapidly. It should be remembered as an axiom that no irregular tension will set up if the casting can be made to cool uniformly and isochronously throughout.

**An International Exhibition of Flouring-mill Products and Machinery.**

The Executive Committee of the Millers' National Association held a meeting at the Plankinton House, in Milwaukee, on the 15th inst., at which there was a full attendance, including Mr. George Bain, of St. Louis, President of the National Association, Mr. J. Christian, of Minneapolis, Chairman of the executive committee, Alexander Smith, of St. Louis, and others of equal note. The principal business transacted seems to have been the discussion of a project to hold in June next, in Chicago, beginning with the occasion of the next annual meeting of the Association, a grand international exhibition of flouring-mill products and machinery. The executive committee have concluded to give such an exhibition, provided certain arrangements can be made in regard to securing the Chicago exposition building, which we have no doubt can be done. The committee have shown exceedingly good taste, and displayed excellent judgment, in selecting this city as the proper place for holding such an exhibition. It would hardly be proper to say that Chicago is the centre of the Universe, but it is proper to say that Chicago is the great commercial center of the United States; that it is the most accessible interior city on this continent; and that while it is the great distributing mart for the products of the West to the whole world, it is perhaps the only city where such an exhibition could be given, with the assurance that it will secure from all directions the attention such an exhibition would unquestionably merit. There are greater milling centers than Chicago. St. Louis outranks us, and so does Minneapolis, in this respect. The total manufacture of flour here for 1878 was only 308,284 barrels, of which one mill (the Star and Crescent) manufactured over one-half. Chicago, though, as a great flouring center, is among one of the possibilities of the not very distant future.

It is clearly evident that Chicago is the natural point for the manufacture of flour in the Northwest. Unless some artificial reasons intervene which are capable of being removed, Chicago ought to be able to manufacture a better quality of flour more cheaply than any other point in the country, and for the following reasons:—The location is exceptionally favorable; coal is plenty and cheap; the raw product can be obtained here in every variety; Chicago is the center of a system of railroads radiating to every point of the compass; it is at the junction of the lake and river navigation of the Northwest; it adjoins heavily timbered regions accessible by water and rail. What other point offers more desirable facilities for the manufacture of flour in such enormous quantities, and consequently, at such low figures; for the more extensive the mills the lower may be the per centum profit on each barrel turned out? It has been urged against such a location as ours that it is destitute of water power, which is claimed to be the most advantageous and desirable for milling purposes. But when it is remembered that, both in the United States and Europe, steam is constantly usurping the place now and heretofore held by water power in this and other manufactures, the objection ceases to be one of moment. Steam flouring mills are at present being operated at a profit at Minneapolis and other points alongside of those run by water.

In 1878 the receipts of grain (all kinds) in this city (flour reduced to wheat) aggregated 134,086,595 bushels, being nearly 40,000,000 bushels in excess of those of 1877, and by more than 35 per cent. larger than those of 1873, in which year they were greater than in any other previous to 1878. The value of flour and

grain (of all kinds) shipped from Chicago in 1878 was \$68,150,000 and the quantity 118,675,269 bushels. In 1878 the aggregate of wheat and flour received in this city was 44,866,287 bushels. Of this quantity, 3,030,562 barrels of flour was manufactured at points outside the city, and 308,284 barrels manufactured in the city. The shipments of flour and wheat in 1878 were 48,368,598 bushels, of which 17,084,477 bushels were manufactured into flour; this includes city consumption.

But we will not pursue this matter further here. It is meet that the executive committee of the National Millers' Association has fixed upon this city as the place for holding the proposed international exhibition of flouring-mill products and mill machinery. The exposition building is central and convenient, and will afford them the most ample space for display of products and machinery to the best possible advantage. They will be kindly received here by our citizens, and no (mill) stone will be left unturned to make such a display as the one proposed a grand success. Let the arrangements proceed.—*Chicago Journal of Commerce.*

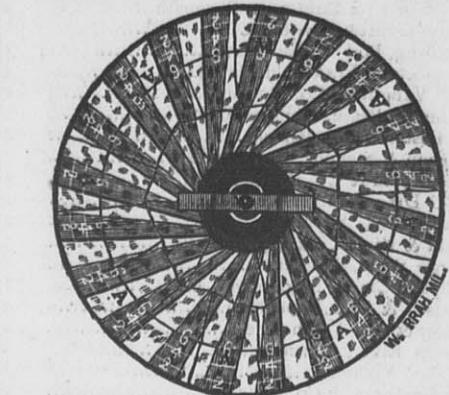
**Minnesota's Wheat Crop.**

The State Statistician of Minnesota, as per returns, now all in, puts the actual average of the wheat crop in that State at 2,755,996 acres, an increase of about 400,000 acres over 1878. This increase was mainly in the northwestern portion of the State, that is northwest of St. Paul. With this increase, and dividing the State on a line from St. Paul to the Western boundary, and about two-thirds of the wheat area lies to the South and West, and one-third to the North and West. All the sections South and West suffered from drought immediately following seeding, and from extreme hot weather just when the berry was in dew, resulting in blight more or less, according to the nature of the soil, and the forwardness or backwardness of the grain. In this section, as divided, there were, in round numbers, about 1,837,330 in wheat. The yield varies greatly, going from 10 to 12 bushels along the Mississippi, dropping to 8 to 9 back from the river, and to 4 to 5 in the southwest, along the St. Paul & Sioux City Railroad. The area in wheat in this latter portion was comparatively small, however, so that a fair average for this section is 9 bushels to the acre, giving an aggregate of 16,535,970 bushels. North and west of St. Paul the drought was not so general in the spring, nor did the crop suffer so much by the drought, the improvement increasing as you approached the frontier, though even here the yield falls short from what was expected at harvest. The division made gives to this section 918,665 acres. The estimate yield for this section is  $13\frac{1}{2}$  bushels per acre, which gives a total of 12,402,475 bushels, and a grand aggregate for the State of 28,938,446 bushels. Of this amount 7,500,000 bushels will be required for seed and bread, while the mills will require, if operated to their capacity, 16,000,000 bushels, making the total to be retained in the State 23,500,000 bushels, and leaving but 5,438,446 bushels for export, if every surplus bushel should be withdrawn. The amount named as being required for seed will be reduced somewhat by the use of Northern Dakota grain, but not sufficiently to materially change the figures.

**NEW METHOD OF SUPPLYING WATER.**—The *American Manufacturer* says an important patent has recently been issued, which promises, it is said, to do for cities and towns what the driven well has done for houses and factories in revolutionizing their water supply systems. The patent consists in one or more series of driven-well combinations, a common section pipe, connecting the well tops and ending in a suction pump which it is claimed, will furnish a liberal supply of water for public use. The working of the pump brings into the wells subterranean water deposits, thus making them a substitute for a reservoir and eradicating local impurities. The invention is founded on several discoveries, resulting from recent experiments at Holyoke, and the advantages claimed are the best possible for fire service, and a continuous and abundant supply of absolutely pure water at a small cost. The discoveries suggesting the patent were, that continuous pumping purifies objectionable water, and that a simple gang of the driven wells can be made a substitute, and more than an equivalent for a reservoir, avoiding expensive embankments, conduits and land damages, and all risks incidental to inclosed surface water.

A LARGE acreage of winter wheat is reported in Missouri. The plant is up and looks very fine. With a good season a much larger crop than ever before is predicted for 1880.

# LEHMANN'S IMPROVED METHOD OF TRUING THE FACE OF MILL STONES.

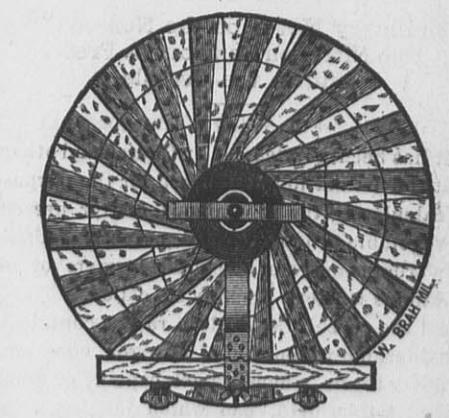


After many years of study and experiment I have at last succeeded in discovering a Method of Truing or Staffing the Faces of Mill-Stones, and have secured Letters Patent therefor. My Method has already been introduced into many mills in Wisconsin, Illinois and many other States, and several of the leading mills in Milwaukee are now using it. The Method is simple and comparatively inexpensive, and with its use the faces of stones can be brought to as true a face as can possibly be desired.

This a result never before accomplished by any staff or method heretofore used. Millers understand the value of such a condition of the stones. Those who take an interest in this, and what miller will not, will do well to address me, and I will send them a circular giving further particulars. My price is very reasonable.

## Lehmann's Improved Adjustable MILL-STONE

# BOSOM STAFF



[Patent applied for.]

This is unquestionably the best Staff ever invented for the purpose of securing a perfectly proper incline from the eye of the stone to the grinding surface, and still keeping that incline in true face. This Bosom Staff sells at sight to any practical miller. He can see in a few moments how accurately it will do its work. It is suitable for high or low grinding. It can be so adjusted in a few moments as to give any incline desired.

With the use of my Method and IMPROVED ADJUSTABLE BOSOM STAFF work equal to the best Roller Mills can be performed. To those that will write me, I will take pleasure in mailing an explanatory circular. Address all communications to

WM. LEHMANN,

722 Fourth St., Milwaukee, Wis.

nov

### Good Qualities and Defects of Steam Boilers.

[Condensed from a lecture.]

BY J. M. ALLEN, OF HARTFORD, CT.

"Very few people, while looking at, admiring, and wondering at the famous Corliss engine at the Centennial Exhibition, stopped to think of the source of its power and energy—few recalled the fact that all this splendid machinery derived its motive power from the concealed steam boilers in the low line of buildings outside the Main Centennial Hall. In crossing the Atlantic in an ocean steamer, how few think of the unsightly, unattractive boilers that furnish the power for the machinery that carries the vessel forward."

"In discussing this question, it is proper that we should know of what materials boilers are constructed, and the methods of their construction. In the manufacture of iron plates it is necessary to obtain an iron ore free from phosphorus and sulphur, the former making a 'cold short' iron, and the latter a 'red short,' either of which is suitable for boiler plates when high pressures are to be used. In the process of 'puddling,' 'shingling,' repeating and rolling into finished plates, the presence of slag or scoria on the bars composing the pile prevents perfect welding."

The method of making boilers was then explained, and the defects from poor workmanship pointed out and illustrated by specimens. The lecturer devoted considerable time to the discussion of chipping and caulking, showing that by the old method boilers were liable to be very greatly injured and incipient defects developed. He recommended the planing of the edges of the sheets preparatory to caulking in preference to the old method of chipping. The necessity of having good material and good workmanship in the construction of boilers was brought more forcibly to the minds of his hearers when he stated that a boiler 16 feet long, 60 inches in diameter, and running at a pressure of 60 pounds to the square inch, sustained an internal pressure of not less than 1,000 tons, the tendency being to burst the surrounding metal asunder. He also stated that railroad locomotives carry a pressure on their crown sheets of not less than 90 tons. It is not to be understood that these are dangerous or excessive pressures, but are mentioned to give some adequate idea of the immense strain to which steam boilers are subjected, and also to show the absolute need of the best material and workmanship in constructing them. Anything short of this is criminal neglect.

Mr. Allen then proceeded to show at what pressure a boiler may safely be worked. He stated that there were formulas for all these, so that the bursting and safe working pressure of the boiler could be easily arrived at. He further showed that the bursting pressure of the boiler above mentioned—16 feet by 60 inches—was not less than 525 pounds to the square inch, but that in practice only one-sixth of the bursting pressure should be allowed, leaving a wide margin for safety. This would admit of about 87 pounds of steam to the square inch as the safe pressure of this boiler. At this point the subject of water used in boilers was taken up, showing that much solid matter, carried in solution, was precipitated by high temperatures. The carbonate of lime, sulphate of lime, carbonate of magnesia, aluminum, and other chemical ingredients, cause a hard, indurate scale, which adheres to the fire sheets of the boiler, greatly reducing the economy in fuel, and rendering the plates liable to severe over-heating and consequent great reduction of strength."

The internal corrosion of boilers was next discussed, showing that this was caused by impurities in the water. Manufactories situated on the banks of a stream discharging their refuse and spent dyes into the current, render the water extremely impure. It will be readily seen that if those manufactories which are situated lowest down on the stream fill their boilers with this water they will have a very impure and dangerous liquid from which to generate steam. Cases of severe and dangerous corrosion were mentioned as arising from this cause. Specimens of corroded plate and braces were shown, where the iron was nearly wasted away, and yet it was stated that the parties owning the boilers had rested securely in the belief that their boilers were sound and well braced. These defects were discovered by careful inspection, a means of safety too often inadequately performed, or neglected altogether. The methods of inspection were next discussed, and it was stated that in all cases where it was possible, boilers should be examined internally as well as externally. Inspection by the "hammer test" was described, showing that a practiced ear, from light blows

on the sheet, could detect defects in the material. The weaknesses arising from wear and tear can only be discovered by the most careful internal and external inspection. Carelessness in the management of the safety valve was considered, and instances of overloading them far beyond the limit of safety were mentioned. In one instance a steam user was found to have wedged his safety valve down by driving a stick between the lever and the beams of the building overhead. The principle of the steam gauge was described, and its importance in connection with the use of steam boilers; also its liability to defects and variations, which can only be detected by comparing it with a gauge known to be correct. This process of comparison was illustrated by very unique apparatus, prepared expressly for this use. The standard by which these test gauges are corrected is a mercury column, which is invariable and therefore reliable. The column which the lecturer described, is inferior to none in the country.

Mr. Allen next considered ebullition, the conduction of heat, and the generation of steam. When pressure is suddenly released, a great disturbance follows within the boiler; the water may be projected against the sides of the boiler at a velocity approximating 2,000 feet a second, which is considered sufficient in most cases to account for the terrific explosions which rend boilers in pieces, throwing portions of them hundreds of feet. Instances of terrific explosions were cited and photographs illustrating them were exhibited. Mr. Allen touched briefly upon the proposed theory of the spheroidal condition of water, repulsion and decentered water as the cause of mysterious boiler explosions. His opinion was that we need not look for mysteries in this matter, when we consider that there are so many things to decrease the ability and working age of a boiler, arising from poor material, inferior workmanship, and careless management. Brief allusion was made to the explosion of the steamer "Adelphi," by which sixteen lives were lost, and an explanation given how this disaster might have been prevented by thorough inspection and timely repairs.

The lecturer closed with a brief history of the formation of coal, the carboniferous age, the wonderful growth of plants, the absorption of carbonic acid gas from the atmosphere, all energized by the rays of the sun, as, according to the present recognized theory, all the energy in coal is derived from the sun, the primitive source of all power.

**EAT ONIONS.**—Few people dream of the many virtues of onions, and those few are enthusiastic for the benignant bulb, and believe it a panacea for every ill. Lung and liver complaints are certainly benefited, often cured, by a free consumption of onions, either cooked or raw. Colds yield to them like magic. Don't be afraid of them—especially if you are married. Taken at night all offense will be wanting by morning, and the good effects will amply compensate for the trifling annoyance. Taken regularly they greatly promote the health of the lungs and the digestive organs. An extract made by boiling down the juice of onions to a syrup, and taken as a medicine, answers the purpose very well, but fried, roasted or boiled onions are better. Onions are a very cheap medicine, within everybody's reach, and they are not by any means as "bad to take" as the costly nostrums a neglect of their use will necessitate.

**HOW MANY HOURS SHOULD WE WORK?**—A writer in the *Atlantic Monthly* says: I believe that for most men more than eight hours' work per day is required for the maintenance of physical, mental and moral health. I think that for most men, including operatives, mechanics, farmers and clergymen, more than eight hours' labor per day is necessary, in order to keep down and utilize the forces of the animal nature and passions. I believe that if improvements in machinery should discharge men from the necessity of labor more than six hours a day, society would rot in measureless and fatal animalism. I have worked more than ten hours per day during most of my life, and believe it the best for us all to be compelled to work. It would be well I think, if we could make it impossible for an idler to live on the face of the earth. Religious teachers are not without responsibility for having taught that the necessity of labor is a curse. The world owes hitherto to men who tried to do as much work as they could. Its debt is small to the men who wish to do little as possible.

Subscribe for the U. S. MILLER; only \$1 per year.

### Rubber Goods.

**ON RUBBER GOODS.**—As many parties require to use rubber goods who are entirely ignorant of the cheap mixtures which are vended in large quantities, at enormous profits by manufacturers, I have thought proper in this place to irradiate the subject with a little "light" for the benefit of those whom "it may concern," and accordingly present the formulæ for compounding the different mixtures which enter into the composition of many articles sold quite extensively as *pure rubber* goods, but which, owing to large adulterations, in many cases cost 75 per cent less than the prices charged for them. The first I shall present is for

**LIGHT BUFFER SPRINGS.**—Grind together clean Java rubber, 25 lbs.; Para rubber, 5 lbs.; common magnesia, 10 lbs.; pure sulphur, 25 ozs. This is brown at first, but in a few days turns grey or white, and just sinks in water. Springs made from this compound,  $4\frac{1}{2}$  x  $2\frac{1}{2}$  x 1, pressed to half an inch, showed 3½ tons on the dial.

**GREY PACKING FOR MARINE ENGINES, &c.**—Grind together cleaned Java rubber, 5 lbs.; Para rubber, 25 lbs.; oxide of zinc, 10 lbs.; carbonate of magnesia, 6 lbs.; Porcelain or Cornwall clay, 3 lbs.; red lead, 2 lbs.; pure sulphur, 30 ozs. It may be proper to state that good purified Java rubber might be substituted by engineers with good effect for Para rubber in the above and some other compositions.

**RAG PACKING FOR VALVES, BEARING SPRINGS, &c.**—This is made principally from the useless cuttings in the manufacture of India-rubber coats, when the gum is run or spread on calico foundations. Proportions as follows: Grind together useless scraps, 35 lbs.; black-lead, 18 lbs.; Java gum, 16 lbs.; yellow sulphur, 1 lb.

**COMPOSITION FOR SUCTION HOSE FOR FIRE ENGINES, &c.**—Grind together Java rubber, 20 lbs.; Para, do., 10 lbs.; white lead, 14 lbs.; red lead, 14 lbs.; yellow sulphur, 1½ lbs. This is spread upon a flax cloth, which weighs 10, 16 and 32 ozs. to the square yard.

**COMMON BLACK PACKING.**—Grind together Java rubber, 15 lbs.; Para, do., 15 lbs.; oxide of zinc, 15 lbs.; China or Cornwall clay, 15 lbs.; yellow sulphur, 28 ozs.

**COMMON WHITE BUFFER RINGS, &c.**—Grind together Java rubber, 30 lbs.; oxide of zinc, 18 lbs.; carbonate of magnesia, 6 lbs.; clean chalk or whiting, 6 lbs.; flour of sulphur, 2 lbs.

**VULCANITE, OR EBONITE.**—If the amount of sulphur added to the prepared rubber amounts to 10 per cent, and the operation of vulcanizing is performed in close vessels, at a temperature exceeding 300, or the heat required for vulcanizing India-rubber, an article will be produced known as *vulcanite*, or *ebonite*. It is a black, hard, elastic substance, resembling horn in its texture and appearance, and capable of taking a very high polish. It is of great use in the arts, and is largely manufactured for making combs, door handles, and hundreds of articles hitherto made in ivory or bone. Its electrical properties also are very great.

**BEST PURE SPRING, OR WASHERS.**—Grind together Para gum, 30 lbs.; oxide of zinc, 5 lbs.; carb., magnesia, 2 lbs.; common chalk, 3 lbs.; Porcelain or Cornwall clay, 2 lbs.; pure sulphur, 30 ozs.

**COMPANION QUALITY TO ABOVE.**—Para rubber, 30 lbs.; oxide of zinc, 5 lbs.; Porcelain or Cornwall clay, 5 lbs.; pure sulphur, 32 ozs.

**"HYPO" CLOTH FOR WATERPROOF COATS.**—Grind together clean Java gum, 30 lbs.; lampblack, 5 lbs.; dry chalk or whiting, 11 lbs.; sulphur of lead, 5 lbs. This composition is applied to waterproof garments.

**TO VULCANIZE INDIA RUBBER.**—The vulcanizing process, patented by the late Charles Goodyear, consists in incorporating with the rubber from 3 to 10 per cent of sulphur, together with various metallic oxides, chiefly lead and zinc, the quantity of the latter articles being regulated by the degree of elasticity, etc., required in the desired article. The goods of one large establishment are vulcanized in cylindrical wrought iron steam heaters over 50 feet long and from 5 to 6 feet in diameter. These heaters have doors opening on hinges at one end, and through these doors the goods to be vulcanized are introduced on a sort of railway carriage, then, after the door is shut, steam is let on, and a temperature of from 250° to 300° of heat is kept up for several hours, the degree of heat being ascertained by means of thermometers attached to the heaters. The value, solidity, and quality of the goods is much increased by keeping the articles under the pressure of metallic moulds

or sheets while undergoing this process. The whole process requires careful manipulation and great experience to conduct it properly.

**TO DEODORIZ RUBBER.**—Cover the articles of rubber with charcoal dust, place them in an enclosed vessel, and raise the temperature to 94° Fahr., and let it remain thus for several hours. Remove and clean the articles from the charcoal dust, and they will be found free from all odor.

**GUTTA-PERCHA AND RUBBER WASTE.**—The waste is cut into small pieces, and 100 lbs. of the same are placed in a well-closed boiler with 10 lbs. of bisulphide of carbon and 4 ozs. absolute alcohol, well stirred; then the boiler is closed, and left a few hours to soak. After this time it is found to be changed into a soft dough mass, which, after being ground or kneaded, is fit to be formed into any shape, when the solvent will evaporate. If too much of the latter has been used, a thick unmanageable liquid is obtained.

**BREAD FROM WOOD.**—In an article on dietetics in the *Quarterly Review*, there is an account of an experiment made by a German professor to utilize wood as a bread-making substance. To make wood flour to perfection the learned experimentalist said, the wood, after being stripped of its bark, was to be sawed transversely, into disks of about an inch in diameter. The sawdust was to be preserved and the disks beaten to fibres in a pounding mill. The fibres and the sawdust mixed together were next deprived of everything harsh and bitter soluble in water, by boiling or by subjecting them to the action of cold water, which was done by enclosing them in a sack and beating the sack with a stick or treading it with the feet in a rivulet. After this pulping operation the dust and fibres were completely dried either by the sun or by fire, and repeatedly ground in a flour mill. The ground wood was next baked into small flat cakes, with water rendered slightly mucilaginous, by the addition of some decoction of linseed, mallow stocks and leaves, lime tree bark or any other similar substance. The professor preferred marsh mallow roots, one ounce of which rendered eight quarts of water sufficiently mucilaginous, and these served to form four pounds and a half of wood flour into cakes. These cakes were baked until they were well browned on the surface, and afterwards broken into pieces and ground until the flour was sufficiently pulverized, to pass through a fine bolting cloth, for on the fineness of the flour depends its suitability for bread-making. The flour of a hard wood such as beech was found to require the process of baking and grinding to be repeated. The wood flour it was found, did not ferment so readily as wheaten flour, but the professor ascertained that fifteen pounds of beech-wood flour mixed with three pounds of sour wheat loaf and two pounds of wheat flour mixed with new milk yielded thirty-six pounds of very good bread. The learned gentleman first tried the nutritious qualities of the produce of his wood flour upon a little dog; afterwards he fed two pigs upon it, and then, taking courage, he attacked it himself in the form of gruel, soup, dumplings, and pancakes, with as little of any other ingredients as possible. The family party which conducted the experiment found the dishes palatable and quite wholesome, but this form of ligneous farina does not seem to have found much favor beyond the limits of the inventors household.

**COAL OIL AS A PAIN-KILLER.**—The efficacy of coal oil as a pain-killer is not generally known, nevertheless it has curative properties to a remarkable degree. This was illustrated by an incident which happened at the Tallisman mine a few days ago. On Sunday afternoon a man named John Jones was sitting in the hoisting works, when a large black spider, of the venomous species, bit him in the side. It caused great pain, and the resources of the workmen were taxed to suggest means to relieve the sufferer. At length Mr. Green, the engineer, got some coal oil and applied to the affected part, when the pain ceased almost instantly, and no trouble has since been experienced from the bite.—*Amador Ledger*.

Messrs. Knapp, Stout & Co., of Menominee, Wis., are building a new seven-run mill at Rice Lake, Barron county, Wis. Captain Downs has charge of the work.

Messrs. White Bros., Muckmore Mills, Anttrim Ireland, have recently entirely remodeled their mill on a combination of the Austrian and American systems. The reels used are no the American plan.

## NEWS.

## EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

THE Eureka Manufacturing Co., manufacturers of the Becker Brush, "report recent sales of their celebrated machines": Sinker, Davis & Co., Indianapolis, Ind.; Richmond City Mill Works, Richmond, Ind.; Metler & Son, Flat Rock, Mich.; Henry Keiser, Bloomington, Ills.; L. G. & E. Wood, Hopkinsville, N. Y.; P. W. Skinner, Phillipsburg, N. J.; Eli Artherholt, Sharon, Penn.; Isaac W. Stanley, Greenwood, Mo.; C. Woodering, Milledgeville, Ill.; Addison Imbrie, Green castle, Pa.; Nathan Sellers, Philadelphia, Pa.

Messrs. Moore & Kerrick, of Indianapolis, Ind., report business improving rapidly. The advance in prices is received by their customers with general satisfaction, and take it for granted that a still greater advance will be made on all kinds of machinery.

Chas. B. Slater, of Blanchester, Ohio, reports business booming. His bolting reels and mill supplies generally, give satisfaction to all purchasers.

Messrs. Filer, Stowell & Co., of the Cream City Iron Works, Milwaukee, are crowded with orders, and are running their shops 15 hours per day.

Messrs. Teter & Allen report immense orders for their mill-stone rubber. See advertisement on another page.

Chas. Semmeren, of Belmont, Wis., has contracted for a first-class two-run mill.

Nordyke & Marmon Co., the mill-furnishers at Indianapolis, Ind., are building a two-run water mill for G. K. Vaughan, of Monrovia, Alabama.

C. G. Wallace, of Monmouth, Kansas, is erecting a two-run mill.

McClure & Co., of Metamora, Ind., are fixing up for the manufacture of new process flour. Nordyke & Marmon Co., of Indianapolis, Ind., furnish the machinery.

The Machlenhaus Company, of Mt. Pleasant, Utah, are building a water mill, and their machinery is being made by Nordyke & Marmon Co., of Indianapolis, Ind.

McKenzie & Bowen, of North Liberty, Ind., are putting new process machinery in their mill. Nordyke & Marmon Co., of Indianapolis, Ind., fill their orders for same.

F. M. Davis, of North Salem, Ind., is fitting up a mill for the manufacture of hominy, meal, grits, etc.

The Swedes are coming to America for improved mill machinery. Nordyke & Marmon Co., of Indianapolis, Ind., have orders for two complete mills, to be delivered in Sweden.

Ressler & Johnson, of Hobbs Station, Ind., are erecting a grain elevator. Nordyke & Marmon Co., of Indianapolis, Ind., have the contract for furnishing the machinery for same.

John Eerree, of Somerset, who recently had his mill destroyed by fire, has contracted with Nordyke & Marmon Co., of Indianapolis, Ind., for a new four-run new process mill to replace the old one.

G. W. Browning, of Worthington, Ind., is putting in two run of buhrs and a lot of other machinery.

F. M. Bates & Co., of Browning, Ill., are increasing capacity of their mill and putting in all the late improvements, which are being furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

A three-run mill having all the improvements is about to be built at McPherson, Kan., by McElroy & Shultz. It will be driven by an Atlas engine, and all is being furnished by Nordyke & Marmon Co., Indianapolis, Ind.

The mill at Bronson, Mich., owned by E. & P. Crippin, is being converted into a new-style mill. Almost all the old machinery is being taken out and new work takes its place.

Franco G. Palacio, of Hacienda de la Punta, Durango, Mexico, is putting up a two-run water mill with all the latest improved American machinery. A Leffel turbine will drive the mill, and Nordyke & Marmon Co., of Indianapolis, Ind., are furnishing the entire outfit.

The firm of Dill, Redmond & Bulkley, millers, of Paris, Ill., have dissolved, and the business will be carried on by Joe Redmond & Co., hereafter. A large amount of extra machinery for increasing the capacity is being put into this mill by Nordyke & Marmon Co.

of Indianapolis, Ind., who originally built it, and is known as the best mill in Eastern Illinois.

Kirk Emery, a miller at Wadena, Minn., died recently.

The Farmers' elevator at North Branch, Minn., is completed.

Rader & Co., of Clifton, Wis., are shipping flour to Scotland.

The Richland mills, at Bloomfield, Ind., are being thoroughly repaired.

Winter wheat in the vicinity of Lanesboro, Minn., is looking very fine.

Mr. E. Krenke, of Hudson, Wis., has leased the Beebe mill at Boardman, Wis.

The large elevator at Fargo, Dakota, of 140,000 bushels capacity, was opened October 20th.

The Northern Pacific road is carrying wheat into Duluth, Minn., at the rate 30,000 bushels a day.

A five-run mill is soon to be built at Newport, Minn., by Messrs. Peabody Bros., from Eau Claire, Wis.

Geo. Mead and Sam Kaucher are putting up a five-run mill on Emanuel creek, near Springfield, Dakota.

The receipt of wheat at the mills and elevators in Stillwater, Minn., last week, amounted to 23,000 bushels.

T. W. Haverlandt, of Utah, Wis., intends to put two more run of stone into his mill, to be driven by steam power.

Wm. Sloan, for several years past employed in the Archibald mill, at Dundas, Minn., has removed to Crookston, Minn.

Wheat has been up to ninety-two cents in Fargo. One man said he would make \$10,000 by his inability to ship at an earlier date.

The Excelsior mill at Yankton, Dakota, has been so busy on Government contracts lately, as to be obliged to refuse other business.

The Osage City mills, owned by Messrs. E. M. Britts & Co., at Osage, Iowa, have been undergoing extensive improvements of late. Besides considerable new machinery, a new flume 100 feet long, 12 feet wide and 12 feet deep, requiring 17,000 feet of lumber, has been built, the mill buildings and adjoining dwellings new roofed and thoroughly painted, and everything put in first-class shape.

The new mill at Chippewa Falls, Wis., started up to run day and night on Oct. 20. It is 50x80 feet on the ground, contains five run of buhrs, and was built under the superintendence of Mr. Gorton, millwright. The mill is furnished by Messrs. Stout, Mills & Temple, of Dayton, Ohio. Mr. Levi Hart, formerly of the Glen Mills at Chippewa Falls, will have charge of the mills for the present, as Mr. Hiram Preston, who will be the head miller, is sick, and will not take charge of the mill until fully recovered.

The flouring mill at Lathrop, Mo., was destroyed by fire on the morning of the 22nd. Supposed to be the work of an incendiary. The mill was owned by C. Goodnow, formerly of Lathrop, but now residing at Peoria, Ill. The original cost of the mill was \$16,000. No insurance. Messrs. Tuthill & Van Meter were the lessees of the mill at the time it burned. The mill had not been running for two weeks previous to the fire.

At Minneapolis, Oct. 23, the Erie & Milwaukee Line contracted to carry 8,800 of flour to Alexandria, Egypt, for \$1.14 per hundred pounds.

Angus Smith's new elevator in Milwaukee is 160 feet in height and has a capacity of 800,000 bushels.

The distress in Hungary on account of the bad harvest is very great. The Government has suspended the collection of taxes until the next harvest has been gathered. In 57 towns and villages in the Temes country the greatest distress prevails. In the Sards country, where some cases of starvation have occurred, 40 parishes are threatened with famine. Frightful accounts have also been received from the country of Aleanj, Heves and Zemplin.

Owing to an advance in the price of flour, the bakers at Melbourne, Victoria, are now charging 7d. for the 4-lb. loaf.

A fire at Ludington, Mich., on the 11th inst., destroyed Wansbeck & Farrell's flouring mill and sash factory. Loss, \$17,000.

J. D. Bowersock, proprietor of the Douglass county mills and elevator, at Lawrence Kan., has just enlarged the capacity of his establishment by the addition of five run of stone, two Leffel wheels, one set iron rolls, one bran

duster, one No. 6 Smith purifier, one packer, twelve reels, &c. This makes eleven run of stone in the mill, and one in the elevator. This is now the largest and finest establishment of its kind in the State. The elevator connected with the mill has a capacity of 100,000 bushels.

The George T. Smith's Middlings Purifier Company have recently shipped ten large-sized No. 5 machines to Heinrich Hagemann, Budapest, to be placed in his mill in that city. The mill has a capacity of 1,700 barrels per day,

B. F. Paul, of Henderson, Minn., has put in new roller mills, Kurth Cockle machinery, stillwell heater &c., and has also built a 40,000 bushel elevator, situated about 100 feet away from the mill and driven by means of a wire rope from the mill.

Among the exhibits at the American Institute Fair, now being held in New York, are mills and flouring machinery shown by Leonard and Silliman, Bridgeport, Conn.; the Ross mill, shown by Chas. Ross, Williamsburg, and several samples of flour, exhibited by G. V. Hecker, New York.

St Paul it to have a new elevator with a capacity of 750,000

The foundation for W. D. Washburn & Co.'s new mill at Anoka, Minn., are now being put in. The building will be 60x120 feet, five stories high above the basement. The mill will be 80 feet in length of this building and will have a capacity of 500 barrels per day. Forty feet in length of the building will be used as an elevator and will have a storage capacity of 80,000 bushels. The power will be furnished by the Rum River, which has a fall of about nine feet at this point.

The Exchange Flour Mill, owned by D. D. Magann, and situated in East street, between Rivington and Delaney streets, New York, was destroyed by fire on the 19th October. The mill was a six story brick building with a frontage of fifty feet and running through the block to Goerck street. It was filled with a heavy stock of flour, feed, oats and meal. The total loss by the fire will reach \$120,000.

Mr. Magann estimated the total amount of grain destroyed at \$60,000; Machinery, &c., \$25,000, and damage to the building, \$25,000 about half of the machinery belonged to him. He could not state what the amount of his insurance was or give the names of the companies. He was positive that he was not fully insured, however. In addition to the loss on the mills, considerable damage was done by water to the grain storage warehouse of Mr. Lawrence, No. 38 East street, adjoining the burned mills. The origin of the fire is unknown, as on Saturday night all the fires were extinguished.

The recent rains in Virginia have furnished plenty of water and the flour mills are running on full time again.

The Milwaukee Middlings Millstone Co. are building a 5-run mill for Messrs. Schlegel & Koenig at Saukville, Wis.

The building for the new six hundred barrel mill being built in Milwaukee by the Milwaukee Middlings Millstone Co., is now completed, and the millwright work is progressing rapidly.

The Milwaukee Middlings Millstone Co. are building a 3-run mill at Sauk City, Wis., for Messrs. M. Lodde & Son.

The Milwaukee Middlings Millstone Co. are overhauling Messrs. McMoran & Co.'s mill at Port Huron, Mich.

The Milwaukee Middlings Millstone Co. are furnishing a number of new stones and a quantity of machinery to Mr. John Lean, of Whitewater, Wis.

Mr. R. P. Owen's mill at Ruoka, Minn., which was built last spring by the Milwaukee Middlings Millstone Co., and which was burned down just when it was ready to start up, has been rebuilt by the same firm, and is now almost ready to start again.

The Milwaukee Middlings Millstone Co. have sold one hundred and fifty of their little mills during the past thirty days.

The Milwaukee Middlings Millstone Co. are building fifteen new flour mills in various parts of the country, and refitting a number of others.

The Milwaukee Middlings Millstone Co. have been obliged to make extensive additions to their stone shops, and now have the largest and best stone shop in the West, and carry the largest and choicest stock of burr blocks.

The Winona Mill Co., of Winona, Minn., have given the entire contract for their new mill to E. P. Allis & Co., Milwaukee, including

a Reynolds Corlis Compound engine and steel boilers. This mill will have a capacity of 1,000 bbls. of flours in 24 hours, and will be one of the finest in the U. S.

The Cockle Separator Mfg Co., are building their machines up to a capacity of 500 bushels per hour, and many of the large elevators have ordered machines of this capacity.

The Cockle Separator Mfg Co., has sold a large number of machines to an European milling firm during the last month.

Charles Wng's mill, near Dubuque, Iowa, burned, Oct. 25th. Loss \$4,000. No insurance.

Edw. P. Allis & Co., are putting extensive improvements in the Star and Crescent mills Chicago, including a large number of porcelain rollers.

A. Mowbray is putting a porcelain roller machine in his Stockton Mill.

The Milwaukee Milling Co., are putting in a "28x60" Reynolds-Corlis condensing engine, and a number of porcelain roller mills, all furnished by E. P. Allis & Co.

Jesse Ames Sons, of Northfield, Minn., are putting in porcelain rolls.

The Camp Spring Mill Co., of St Louis are putting in another porcelain roller mill. This makes the seventh they have ordered from Edw. P. Allis & Co.

Joseph Kratochwell, of Dayton, Ohio, is adding two more porcelain roller mills to his mill.

The Wells Flouring Mill Co., of Wells, Minn., and C. B. Slater & Co., of Blanchester, Ohio, have ordered porcelain roller mills from Edw. P. Allis & Co., Milwaukee.

E. T. Halbert, of Zumbrota, Minn., has ordered a 14x36 Reynolds-Corlis engine, from Edw. P. Allis & Co., Milwaukee.

Edw. P. Allis & Co., have orders from Byron & Maes, Owatonna, Minn., for a 14x42 Reynolds-Corlis engine, and from Wardell & Hinkley, of Chicago for a 16x42.

A. A. Freeman of La Crosse, Wis., has contracted with Edw. P. Allis & Co., for his new elevator.

#### The Oldest Milling Journal in the United States.

This claim is made by different parties, but not being well established I wish to give a few facts which may lead to a settlement of it.

Bucyrus, Ohio, a thriving little inland city on the P., Ft. W. & C. Ry., of 4,000 to 5,000 inhabitants, claims this honor. I have before me a few copies of a paper, put up in their original wrappers, published in Bucyrus, Ohio, May 1, 1861, called the "Miller's Journal," a monthly devoted to the interests of millers, published by Raub & Butterfield. Terms: 50c per annum. Vol. 1, No. 1.

This paper was strictly a milling journal as any of the journals now published for that purpose, as every article in it had direct reference to grain, flour or mill machinery. On the fourth page I find a sketch of what was then called the "Ingham or California Smutter and Separator Combined," now manufactured by M. Deal & Co., of Bucyrus, Ohio, and known as Deal's Improved California Smutter and Separator Combined. I also find in these papers, put in at the time they were issued, the address of M. Deal as general agent for the California Smutter. This paper was largely circulated in Ohio and other Western States for the very same purpose that nearly all milling papers are issued, viz: to advertise certain goods in this line, and at the same time give general information on milling. Although this was their first number and an altogether new departure, yet the publishers need not be ashamed of it. Because of the above facts, Bucyrus, Ohio, claims the honor of publishing the first milling journal, and will continue to claim it until proof is furnished to the contrary, which I hope will be done if the facts will warrant.

I have shown this paper to some of the publishers of milling journals, and they regard it a literary curiosity among milling papers. In order to prove what I affirm, I will send by request, to any of the publishers of milling journals a copy for examination on condition they return it, as I have not enough copies to supply the brotherhood now so numerous, and constantly on the increase.

The object of this article is to present to the milling public a few facts, and claim for our little city this honor to which it seems to be entitled, but has not been publicly claimed until now. I am, respectfully, M. DEAL.

Subscribe for the U. S. MILLER; only \$1 per year.

**Millers' National Association.****FINANCIAL STATEMENT.**

At the late meeting of the Executive Committee, in this city, Treasurer Seaman submitted the following statement of receipts and expenditures from June 13, 1877, to May 15, 1879:

**RECEIPTS.**

Balance on hand June 13th, 1877.....	\$ 4 12
Received from Illinois Association per Executive Committee report.....	9,743 22
Rec'd from membership fees not included in report.....	100 00
Rec'd from Indiana Association per Executive Committee report.....	2,650 00
Rec'd from membership fees not included in report.....	55 00
Rec'd from Iowa Association per Executive Committee report.....	3,275 00
Rec'd from membership fees not included in report.....	45 00
Rec'd from Kansas Association per Executive Committee report.....	75 00
Rec'd from membership fees not included in report.....	25 00
Rec'd from Michigan Association per Executive Committee report.....	4,175 00
Rec'd from membership fees not included in report.....	100 00
Rec'd from Merrill & McCourtie.....	132 00
Rec'd from Minnesota Association per Executive Committee report, \$21,877.29, less \$1,000 paid back at Chicago.....	20,877 29
Rec'd from membership fees not included in report.....	35 00
Rec'd from Missouri Association per Executive Committee report.....	6,824 44
Rec'd from membership fees not included in report.....	145 00
Rec'd from Nebraska Association per Executive Committee report.....	278 00
Rec'd from membership fees not included in report.....	15 00
Rec'd from New York Association per Executive Committee report.....	8,977 64
Rec'd from membership fees not included in report.....	23 00
Expenditures in Denchfield suit allowed by Executive Comm on new assessment Received from Ohio Association per Executive Committee report.....	3,500 00
Rec'd from membership fees not included in report.....	3,000 00
Rec'd from Robert Colton.....	160 00
Rec'd from Wisconsin Association per Executive Committee report, \$11,700, less error of \$21.35 allowed March 4, 1878.....	11,678 65
Rec'd from membership fees not included in report.....	30 00
Rec'd from unorganized States.....	2,865 84
Total.....	\$83,275 20

**EXPENDITURES.**

Paid for postage and telegraphing.....	\$ 608 29
Paid for printing.....	5,861 27
Paid Geo. Harding, retainer in the Cochran suit.....	2,500 00
Paid Geo. Harding, retainer in Denchfield suit.....	500 00
Paid Geo. Harding, services.....	\$40,633 83
Less expenses.....	28,080 33
	12,603 50
Paid Gordon E. Cole, legal services.....	6,599 00
Paid F. N. Judson, legal services.....	5,402 00
Paid N. C. Gridley, legal services.....	625 00
Paid Chas. A. Seward, legal services.....	2,500 00
Paid G. B. Seidlon, legal services.....	5,264 90
Paid attorney's traveling and hotel expenses.....	200 00
Paid officer's traveling and hotel expenses.....	6,851 25
Paid witnesses and experts.....	1,292 07
Paid for models and purifier machinery.....	14,516 94
Paid for books and publications.....	3,339 15
Paid court stenographers.....	1,238 81
Paid for drawings and photographs.....	711 66
Paid Patent Office expenses.....	266 50
Paid Harding's incidental expenses.....	531 86
Paid short hand reporters at St. Louis.....	783 15
Paid for copying testimony at St. Paul and St. Louis.....	81 50
Paid for drawings and tracing at St. Louis.....	104 49
Paid notary's services at St. Louis.....	75 00
Paid incidental expenses.....	64 80
Paid exchange account.....	128 23
Paid Frank Little for services.....	61 41
Allowed New York Association Denchfield suits.....	1,075 00
Allowed Illinois Association Denchfield suits.....	3,600 00
Allowed Illinois Association on Downton suits.....	2,016 22
Paid Harding (Cr. Michigan Association).....	500 00
Balance in treasury May 15, 1879.....	2,000 00
Total.....	1,473 28

**SECRETARY SEAMANS' ACCOUNT WITH THE NATIONAL ASSOCIATION.****RECEIPTS.**

Balance from old treasurers' account.....	1,473 29
Received from Indiana Association at Chicago.....	267 00
Rec'd from Kentucky Association, per D. B. Merrill.....	100 00
Rec'd from Kansas Association, per D. B. Merrill.....	80 00
Rec'd from Nebraska, Kendall & Co.....	7 50
Rec'd from Kansas, Robert Atkinson.....	20 00
Rec'd from W. Virginia, Novelty Mill Co.....	70 00
Rec'd from Iowa, J. R. Serrin, Treasurer.....	250 00
Rec'd from Kansas, Woodward & Norton.....	20 00
Rec'd from Nebras-ka, C. T. Smith, Treas.....	52 50
Rec'd from Kentucky, Patton & MacLlin.....	137 50
Rec'd from California, H. G. Smith.....	175 00
Rec'd from Pennsylvania, A. Z. Schoch.....	162 50
Rec'd from Delaware, W. M. Lea & Son.....	90 00
Rec'd from Pennsylvania, A. Z. Schoch.....	75 00
Rec'd from Michigan, W. Hibbard.....	2,000 00
Rec'd from Oregon, Salem Flour Mill Co.....	200 00
Rec'd from Kansas, Shellabarger, Griswold & Co.....	105 00
Rec'd from Kansas, O. W. Baldwin.....	35 00
Rec'd from Iowa Association, account 1879 assessment.....	600 00
Rec'd from Missouri, D. B. Kirk.....	300 00
Rec'd from Pennsylvania Association, account 1879 assessment.....	250 00
Rec'd from Ohio Association, account 1879 assessment.....	710 00
Rec'd from Indiana, account old assessment.....	650 00
Rec'd from Iowa, Charles City Water Power Co., account old and new assessments.....	175 00
Rec'd from Kansas, Bowman & Kellogg.....	40 00
Rec'd from Kentucky, D. E. Roberts.....	40 00
Rec'd from W. Virginia, Novelty Mill Co.....	70 00
Rec'd from W. Virginia, J. B. Ficklen & Sons.....	70 00
Rec'd from Delaware, W. M. Lea & Sons.....	60 00
Total.....	\$8,285 29

**EXPENDITURES.**

Paid George Harding—Received from Indiana Association at Chicago.....	\$ 267 00
His draft on National Association.....	1,000 00
Draft received from Michigan Assoc'n 2,000 00	
Paid B. C. Converse, balance his account.....	80 00
Paid for printing—American Miller, Chicago.....	18 45
Alex. H. Smith, short-hand reporting and printing.....	17 00
Cramer, Aiken & Co.....	96 15
Paid D. B. Merrill—Frank Little's expenses at Chicago.....	20 50
Copying vouchers.....	4 00
Paid hotel and traveling expenses—F. B. Mills, to Detroit, Kalamazoo and Grand Rapids.....	29 75
S. H. Seaman, to Chicago to see Hardig. F. B. Mills to Grand Rapids and return.....	9 75
Paid Seifert & Schoeffels, engraving letter-heads and envelopes.....	20 00
Paid F. B. Mills, account of services.....	49 00
Total.....	\$10 00

Paid for blank books and stationery for use in office of Association.....	26 02
Paid for postage and telegraphing from May 15 to date.....	46 26
Paid for exchange on drafts from D. B. Merrill and State Association.....	6 87
Balance now in treasury.....	3,989 04
Total.....	\$8,285 29

F. B. MILLS, Assistant Secretary.

Milwaukee, Oct. 16th, 1879.

**The Geysers of the Azores.**

We crossed a stretch of the plateau, and suddenly looked down on the other side of it into an immense, deep, nearly circular crater, beautifully green.

Its undulating bottom was dotted over with white houses among gardens and corn fields, and in the distance was seen a small column of steam hovering over the hot springs. We drove down a steep incline for at least a couple of miles, and at last reached the village of Furnas. The road hence to the hot springs led across a small stream fed by them, deeply stained red, and smelling strongly of sulphurated hydrogen. Thence the path went up a little valley, cut out in the low ridge of very fine light whitish ashes which separates the main Furnas valley from that part of it in which the Furnas lake is situated. It is a beautiful tiny glen, with dark evergreen foliage on its steep banks, and on the swamp borders of its narrow bed were masses of the brilliant green leaves of the eatable arum (*Caladium esculentum*), one of the staple foods of the Polynesians, their "taro." The "taro" is cultivated all over the islands, but thrives here, especially in the warm mineral water.

The Furnas lake is about three miles in circumference. There two groups of boiling springs, the one at the margin of the lake, the other close to the town of Furnas. The boiling springs near the lake are scattered over an area of about 40 yards square, covered with a grayish clayey deposit; a geyser or hot spring formation being composed of matter deposited by the hot water. No doubt the present hot springs are the dwindled remains of former fully developed geysers.

The principal spring consists of a basin about 12 feet in diameter, full, up to within 2 feet of the brim, of a bluish water, which, in the center, is in constant and most violent ebullition, the water being thrown up a foot in height as it boils forth. A constant column of steam rises from the basin.

Near by is a sort of fissure, from which issue, at short irregular intervals, jets or splashes of boiling water mingled with steam and sulphurated hydrogen in abundance.

This spring makes a gurgling, churning sort of noise; the large basin, a sort of roar. In the sides of the fissure grow, in the area splashed by the hot water, some green lowly organized algae (*Bryococcus*) which form a thick crust upon the rock surface. Similar growths of lowly organized plants in the water of hot springs have been observed in various parts of the world. At a couple of feet distant from this hot spring rushes up a perfectly cold iron spring with a considerable stream of water.

All around are small openings, from which sulphurated hydrogen and other gases issue with a fizzing noise, and coat the openings with bright yellow crystals of sulphur. The ground around is hot, too hot in many places for the hand to rest upon, and it is somewhat dangerous to approach the pools of hot water at all closely, since the hard crust on the surface may give way, and one may be let fall into the boiling mud.

Just above these hot springs is a beautiful mountain stream, which forms little cascades as it tumbles down to the lake valley from the fern-clad moor above.

At the town of Furnas is an inn kept for families who come in the season to drink the waters and bathe. There is a free bath house, built by the Government, with marble baths and hot and cold mineral water laid on to each.

The whereabouts of the springs near the town are marked by clouds of steam. The springs are scattered over a larger area than at the lake springs, and the gray geyser formation is piled into irregular hillocks around them, instead of presenting a nearly flat surface, as at the other springs.

Here the principal spring is like that at the lake, but the amount of hot steam rushing up is much greater, and the noise is almost deafening. The water is thrown up about two or three feet in a constant hot fountain. Close by are sulphur springs with hot water issuing in violent intermittent splashes; and there is also one deep chasm, from the depths of which boiling hot blue mud is jerked out in similar splashes. The mud hardens on the sides of the cavity into a crust made up of successive laminae. The natives use the natural

hot water to heat sticks or planks, in order to bend them. They also sometimes dig holes in the mud and set their kettles in them to boil. As at the other springs, there are cold springs issuing from the ground close to the boiling ones. One spring has its water charged with carbonic acid and effervesces.

All the springs empty into one small stream, which then runs down to the sea, with a complex mixture of mineral flavors in its water, and retains its heat for several miles.

In the shores of the lake there are large extents of geyser deposits, forming strata 40 to 50 feet in thickness, and evidently resulting from hot springs, now worked out, but with a few small discharge pipes of heated gas remaining active here and there.

Near the seaward end of the lake is a hole, where, as in the Grotto del Cave, an animal, when put into it, becomes stupefied by inhaling the carbonic acid gas discharged.

I made an excursion from Ponta Delgada to the Caldeira des Sette Cidades, or Caldron of the Seven Cities. It is a marvelous hollow of enormous size, with two lakes at its bottom and a number of villages in it. One slowly climbs the mountains from the sea and suddenly looks down from the crater edge upon lakes 1,500 feet below. On the flat bottom of the crater, which is covered with verdure and cultivated fields, and several small secondary craters, the whole reminding one of a crater in the moon. One of these small craters has been so cut up by deep water courses that between them only a series of sharp radiating ridges is left standing, and the crater has thus a very fantastic appearance.—H. N. Mosely.

—THE UNITED STATES MILLER has the largest circulation of any milling journal published in America, and was the first milling journal started in America entirely independent of connection of interest with some machine or mill-furnishing establishment.

The Cincinnati Commercial contains the following communication:

To the Editor of the Commercial:

In a recent issue of your paper I noticed that the Executive Committee of the Millers' National Association had at their meeting in Milwaukee decided to hold an International Exhibition of milling machinery, in connection with the next meeting in June, 1880. Chicago has already put in bids to have this exhibition held there, claiming to have superior facilities in the way of fine Exposition Buildings, &c.

This exhibition will be the first of the kind ever held in this country. The millers' association in England, Germany, Ireland, France and Austria have these exhibitions every year, and there is one to be held at St. Petersburg next year. Such an exhibition, if held here, would attract ten thousand millers to our city. It is proposed to hold the exhibition for two weeks. Every machine used in making flour would be exhibited. Why can we not have this exhibition here? The last meeting of the Millers' National Association was held in Chicago, and now Cincinnati ought to have a chance to extend her hospitality to that industry which furnishes the world with flour and bread. The Chicago exposition buildings are not to be compared to our own, and surely we can compete with that city in the cheapness of hotel fares and railroad rates. Our Power Hall would be sufficient to hold the exhibition in, and it is all ready to be used. The Hon. George Bain of St. Louis, the President of the Millers' National Association, entertains a good opinion of our city as a place suitable to hold the exhibition in, and the St. Louis Globe-Democrat has the following to say on the subject.

It is not yet settled that the International Millers' Exposition will take place at Chicago. The Cincinnati millers are very anxious to have it occur in Cincinnati, and they argue that their Exposition building is much larger and better adapted to the proposed millers' show than is the Exposition building at Chicago. It is for the Executive Committee of the Millers' National Association to determine where the Exposition will take place, and they will give the Cincinnati applicants an answer within ten days. The general feeling here of those interested will be to have the Exposition at Cincinnati if it can't take place in St. Louis. One advantage of the Cincinnati building is that it is all upon the ground floor; another is its vast size.

Will not the business men of Cincinnati, her grain

## THE UNITED STATES MILLER.

**JEWELRY!**

\$75.00 worth for \$15.00,

— AND A —

**Solid Abyssinian Gold Watch****FREE!**

The above offer is genuine, although at first sight you would consider it impossible. We will explain: Since we first established our business here, March 1st, 1878, we have paid particular attention to the buying of Bankrupt and Auction lots of Jewelry and Watches, often buying at as low as one-tenth their value, and in no instance have we paid over one-sixth the manufacturers' price. Since starting we have always been able to dispose of these goods in Chicago and through our regular customers throughout the country at nearly regular prices, as fast as we could procure them, but owing to the large number of failures among the heaviest dealers and manufacturers throughout this and other countries during the months of June, July and August (the time when the Jewelry business is stagnant), we have now on hand an immense stock of the most desirable goods we have ever handled, and which we have bought at lower prices than ever before. In order to dispose of this entire stock in the most speedy manner possible, and make room for new ones which we shall continue to buy, we have hit upon the following novel plan:

We propose to give you a list of the most desirable of these goods, giving opposite each article its regular retail value, and sell to you at the rate of Five Dollars' worth for \$1. For instance, on receipt of 50 cents we will send you, *postage paid*, any article to the value of \$2.50; on receipt of \$1.00 articles to the value of \$5.00, and so on throughout the entire list. Below we give a list of the most valuable of these goods.

**List of Jewelry at Wholesale Prices.**

	Each.
Gent's New Style Scarf Rings or Pins.....	85¢
do Sleeve Buttons, Engraved or Stone Setting...	85¢
do Bosom Studs, do do	85¢
do Round or Long Link Vest Chain and Charm...	85¢
do or Ladies, Plain, Band, Fancy Stone or Cameo Rings.....	85¢
Ladies' Long or Round Fancy Bosom Pins...	85¢
do Stone or Engraved Ear-Drops to match.....	85¢
do Engraved and Fancy Cuff Pins.....	85¢
Any three of the above articles will be sent by mail, postage paid, on receipt of 50 cents	
Ladies' Broad Band Bracelets, Engraved.....	\$1.00
do First-class Scale Rings, Double Heart, Shield, etc.....	1.00
do or Gent's Brilliant Diamond-set Rings.....	1.00
do Long Fancy Shawl or Bosom Pin...	1.00
do Fancy Extension Ear-Drops to match.....	1.00
Gent's Onyx, Amethyst or Topaz Sleeps Buttons.....	1.00
do Onyx, Amethyst or Topaz Shirt Studs (3).....	1.00
do Cameo and other Stone Rings, large.....	1.00
do Heavy Link Vest Chain and Charm.....	1.00
do Extra Fine Scarf Rings or Pins.....	1.00
Any five of the above articles will be mailed free on any address on receipt of \$1.00.	
Gent's Long New Style Link Vest Chain and Charm, \$1.45	
do Scarf Rings and Pins, New Styles and Extra Fine.....	1.45
do Heavy Set Stone and Fancy Studs.....	1.45
do or Ladies' Cameo, Amethyst and Onyx Sleeves Buttons.....	1.45
do or Ladies' Cameo, Amethyst and other Stone Rings.....	1.45
Ladies' Long and very Fancy Cuff Pins.....	1.45
do Extra Finished Onyx, Amethyst and Engraved Pins.....	1.45
do Extra Finished Onyx, Amethyst and Engraved Ear-Drops.....	1.45
do Long Opera or Guard Chains.....	1.45
do Fancy Neck Chains and Charm.....	1.45
Any six of the above articles will be mailed free on receipt of \$2.00.	
Gent's Solitaire or Cluster Australian Diamond Pins, \$1.90	
do Single Stone Australian Diamond Studs (3)...	1.90
do Heavy Large Solitaire Australian Diamond Single Stud.....	1.90
do Fine Finished Long Link Vest Chain and Charm.....	1.90
do Very Nobby and Latest Style Scarf Rings and Pins.....	1.90
do or Ladies' Cameo, Onyx and Amethyst Sleeves Buttons.....	1.90
Ladies' Etruscan Necklaces, very heavy.....	1.90
do Long Opera and Guard Chains, very heavy..	1.90
do Australian Diamond and other Fancy Pins and Ear-Drops.....	1.90
do Stone-set and other Fancy Cuff Pins.....	1.90
do Heavy Engraved Locket for Miniatures.....	1.90
do Chased Brooches, Broad, extra heavy.....	1.90
Any eight of the above articles you may select will be mailed to you free on receipt of \$3.00.	
Ladies' Fancy Neck Chain and Medallion Charm, in Fancy Lined Jewel Casket.....	\$2.50
do Long Opera Chain, with or without Slide and Tassel.....	2.50
do Heavy Large Miniature Medallion Locket....	2.50
do Heavy Jet and Gold Bracelets.....	2.50
do Cameo Medallion Pin and Ear-Drops.....	2.50
do or Gent's Massive Wedding Ring, Plain or Band.....	2.50
do or Gent's Extra Large Cameo, Amethyst or Onyx Rings.....	2.50
do Long Shawl or Breast Pin, finest quality....	2.50
do Long Fancy Cuff Pins, do do	2.50
do or Gent's Cameo, Amethyst or Onyx Sleeve Buttons.....	2.50
Gent's Heavy Long Link Massive Vest Chain.....	2.50
do Cluter or Solitaire Central American Diamond Pins.....	2.50
do Stone and Fancy Leaf Scarf Pins and Rings, 2.50	
do do do Pattern Studs (3).....	2.50
do Massive Solitaire Stud.....	2.50
Any ten of the above articles will be sent by mail on receipt of \$5.00.	
All of this Jewelry is of good quality, but of course, the quality depends greatly on the price; for instance, the \$2.50 articles are of a much finer quality and finish, besides being heavier, than the \$85 ones.	

**TO AGENTS.**

For the benefit of parties wishing to act as Agents for the above goods, we make the following special offer:

On receipt of a \$15.00 order for our Jewelry, as per above offer, we will send the goods ordered, and make the party getting up the club a present of any of the following Watches:

1 Pure Abyssinian Gold Hunting-Case Geneva Watch.

1 Pure Abyssinian Gold Open Face Geneva Watch, Stem-Winder.

1 Pure Abyssinian Gold Stem Winding Watch, Illuminated Dial, by which you can tell the time in the darkest night.

1 Pure Abyssinian Silver Hunting-Case Geneva Watch.

Any of these Four Watches will be sent alone for \$6.50, or the Watch and either a Gent's Heavy Abyssinian Gold Vest Chain and Charm, or a Ladies Solid Abyssinian Gold Long Opera or Opera Guard Chain, for \$8.00. Agents who cannot send the full \$15.00 at once can send small orders as they procure them, and when said orders shall have amounted to \$20.00 we will send the Watch FREE OF FURTHER CHARGE.

**Read What the Chicago Press Say of Us, And Send in Your Orders.**

The *Sentinel*, of Chicago, Sept. 9, says: "We call the attention of our readers to the new advertisement of the Inventors' Agency, No. 116 E. Washington Street, Chicago. What the Inventors' Agency agrees to do, they will do. The *Sentinel* has advertised for the concern since its publication, and we have yet to hear of the first complaint against it."

The *Chicago Express*, Sept. 3d, says: "The attention of readers is called to the advertisement of 'The Inventors' Agency,' office and rooms located at 116 E. Washington St., Chicago. From personal inquiry and on the recommendation of the city press, we think our friends can do no better than wanting goods in that line. Give them a trial."

The *American Stockman*, Sept. 11th, says: "We believe this institution perfectly sound and responsible, and consequently persons need have no hesitation about sending for what they desire."

As to our responsibility we also refer you to the following firms:

Bloomgren Bros., 162 and 164 S. Clark St., Chicago, Ill. Miller, Wagner & Umberstock, 119 S. Clark St., Chicago.

**Before Ordering, Read the Following.**

All sums of money to the amount of \$1.00 or over, should be sent by Registered Letter, Money Order or Draft on New York or Chicago. We will hold ourselves personally responsible for any money sent as above directed. All orders under \$10.00, strictly cash. On orders of \$10.00 or over, \$5.00 must accompany the order, and balance, when desired, will be collected on delivery, but no goods will be sent C. O. D. to a greater distance than 500 miles. Any money received for these goods after the stock is exhausted will be immediately returned. Postage Stamps will be taken the same as cash in any amount less than \$100.

If on receipt of goods you are not perfectly satisfied, return them immediately in good order, and we will refund your money.

Illustrated Catalogue of Watches, Jewelry, Novelties, Novelties and New Inventions sent free on application.

**Agents Wanted.** Address plainly

**THE INVENTORS' AGENCY,**

J. A. KINSMAN, Proprietor,

116 E. Washington St., Chicago, Ill.

NOV

**WANTED.**

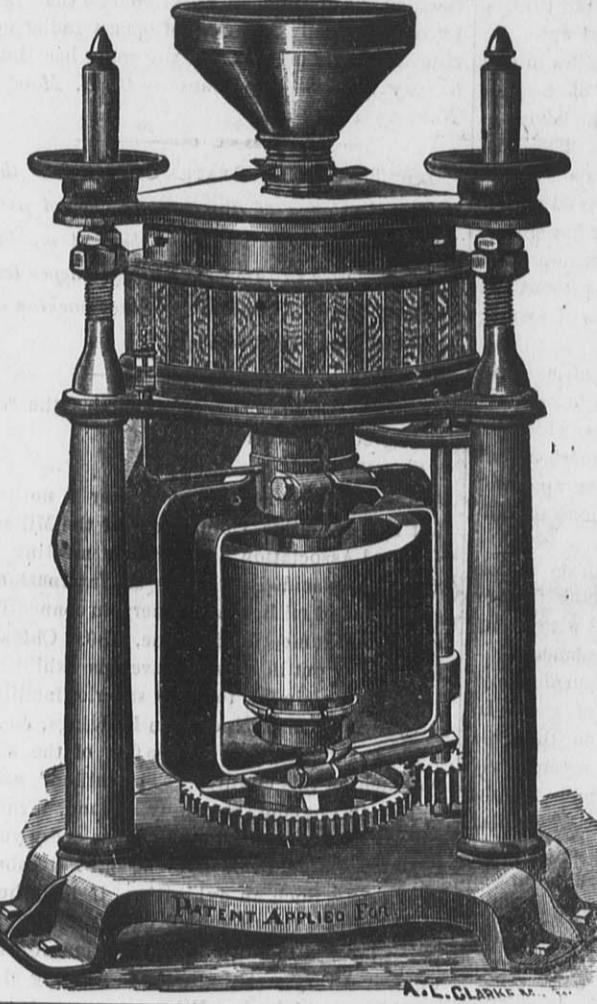
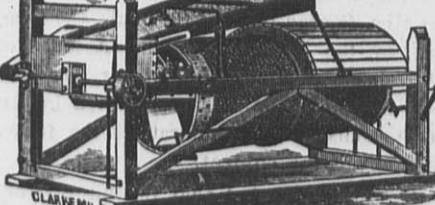
A second-hand run of burrs, suitable for grinding feed. Address with description and terms, Box 48, Ontario, Vernon County, Wisconsin.

NOV

**\$66**

A WEEK in your own town, and no capital risked. You can give the business a trial without expense. The best opportunity ever offered for those willing to work. You should try nothing else until you see for yourself what you can do at the business we offer. No room to explain here. You can devote all your time or only your spare time to the business, and make great pay for every hour that you work. Women make as much as men. Send for special private terms and particulars, which we will mail free. \$5 outfit free. Don't complain of hard times while you have such a chance. Address, H. HALLET & Co., Portland, Maine.

SEP

**CREAM CITY IRON WORKS.****KURTH'S Patent Cockle Separator.****KURTH'S PATENT COCKLE SEPARATOR.**

The machine here illustrated separates perfectly cockle, wild peas, wild buckwheat, and other similarly shaped foreign seeds from wheat. Requires but little power to run it. We also manufacture an

**Oat Separator**

Which is fully equal to any manufactured. This is made in two styles, and is in combination with Cockle Separator. One style has two suction, one operating on grain as it enters the machine and the other as it leaves it, each being independent of the other and easily regulated. The other style has one suction, which may be either first or second. Among our references we respectfully call attention to the following:

MINNEAPOLIS, Minn., Jan. 9, 1879.—Cockle Separator Manufacturing Company—Gents: We have used your machine for the past three years, to our entire satisfaction. We commend them to all in want of a perfect

J. A. CHRISTIAN & CO.

MINNEAPOLIS, Minn., Jan. 16, 1879.—Cockle Separator Manufacturing Co., Milwaukee—Gents: In answer to your favor, would say that we have in use four of your Cockle Machines, and find them to be the only machines that we have yet seen that will separate the cockle from the wheat. The improved machines give us no trouble in any way. We shall want two more machines soon, to replace those burned in our Anchor Mill. Yours,

CHAS. A. PILLSBURY & CO.

MINNEAPOLIS, Minn., Jan. 9, 1879.—Cockle Separator Manufacturing Co., Milwaukee: We are using two of Kurth's Patent Cockle Separators, and while they work somewhat to a disadvantage on the present crop, we know of nothing that will do the work as well. We consider them the best machine made. Yours truly,

BULL & NEWTON.

OSWEGO, N. Y., Jan. 29, 1879.—Cockle Separator Manufacturing Co., Milwaukee—Gents: We are pleased to say that our use of your machines for the last two years, has been highly satisfactory, and especially do we like the new double suction machine, which does its work so perfectly that we would not like to do without it. Indeed we deem the machines indispensable in good milling, particularly with spring wheat. Your friends,

PENFIELD, LYON & CO.

We make a machine especially for extracting Cockle and other similar Seeds from OATS and BARLEY, which is of great importance to oat-meal manufacturers, malsters, etc. Perforated Zinc of all sizes, for sale at lowest market rates. Send for illustrated Circulars, describing machine fully with diameter, capacity, etc., to

**COCKLE SEPARATOR MANUFACTURING CO.,**

P. O. Box 180. Cor. Clinton and Florida Sts., Milwaukee, Wis., U. S. A.

14

**Situations Wanted, etc.**

**Millers, Engineers, Mechanics, etc., wanting situations, or mill-own or manufacturers wanting employees, can have their cards inserted under this head for 50 cents per insertion, cash with order.**

**TO MILLWRIGHTS**—Wanted a situation at Millwrighting. I understand a part of it. Wages no object. I have three inventions, and am working for two more, all connected with the milling business. To the man that will take hold of me and give me work for one year I will give him an interest in my inventions. Address JOHN W. PERTER, Belleville, St. Clair Co., Ill. In care of M. F. Seifert. sept2.

**SITUATION WANTED**—In either a merchant or custom mill; have had eight years experience in the business and guarantee satisfaction in all branches of the business; am a single man; willing to go anywhere. Good references given if desired. Parties answering this advertisement please state terms. All letters answered promptly. Address MILLER, Runch's Gap, Clinton county, Penn. autf.

**WANTED**—Situation in either merchant or custom mill. Have had several years experience both in merchant and custom mills and will guarantee satisfaction in all branches of the business. Am a single man and willing to go anywhere. Parties in need of a first-class miller will do well to correspond with me. Parties answering will please state terms, &c. Address J. P. Rauch, Charleston, Kanawha Court House, Kanawha Co., West Va.

**SITUATION WANTED**—Mill-men wanting a head miller who can improve their brands of flour and make every machine in the mill do the best work of which it is capable, and a man upon whom they can rely in every respect, should correspond with the undersigned. Parties contemplating building new mills or remodeling old ones will find in him just the man they want to plan a successful arrangement of machinery on the gradual reduction system, in whole or part, and to manage same when completed. Correspondence solicited. Address S. S., care of United States Miller, novt. Milwaukee, Wis.

**FOR SALE**—A new Steam Merchant Mill, with 4 and 3 feet burrs. Everything in good running order, so as to make the best flour. Will sell below cost price. Enquire of H. EULER, Desota, Jefferson Co., Wis. oc

**FOR SALE**—At a ruinous price—My Water Power Grist Mill. On investigation their mill will be found to be the cheapest property ever offered. For particulars address L. K. VAUGHAN, Farragut, Fremont Co., Iowa.

**FOR SALE**—At a great sacrifice—One of the best 4-run New Process Flouring Mills in Illinois; 4 stories, brick and stone; slate roof, brick smoke stack. Been running 18 months; everything is new, complete and in excellent order. Has side track, cooper shop, wagon and stock yards, and an inexhaustible fresh water pond. Wood is delivered at \$1.25, and the best coal at 8 cents and less. Fuel costs only \$3 per day of 24 hours. Have fine trade and custom. Give 35 pounds of flour and 10 pounds of bran for 60 pounds of wheat. Vast quantity of No. 1 winter wheat are raised here. I am 65 years of age and know nothing about milling, so will sell to responsible party on decided easy terms. No others need apply. Title is perfect. Call or address C. H. HEARD, McLeansboro, Ill.

**GRIND MILL FOR SALE AT A SACREDIE**—Merchant and custom mill, situated in Belvidere, county seat of Boone county, Illinois. The mill has four run of French burrs, and all the machinery is of best class; driven by a never-failing stream of water (Kishwaukee river). Mills of this class are seldom offered for sale, but the proprietor is very aged, and wishes to retire. Would sell for one-third cash down, balance on suitable terms, or would sell one-half of mill property. A person with means would do well to investigate immediately. For further particulars apply to the owner or address Box 544, Belvidere, Illinois. au2t JAMES B. MARTYN.

**FOR SALE**—A one-half interest in a Grist Mill. Size, 25 x 35 feet; wing, 12 x 20. Mill is two and a half stories high. Two run of burrs; size, 3 and 4 feet. Two new Lefel wheels. Fifteen feet head in a never failing stream. Ten acres of land, a house, barns and mill sheds. School and church near by. Is located on a main road, and within 2 miles of a city of 8,000 inhabitants. Mill is in good repair and doing a fine business. Object in selling is, I am blind and want a good steady man to take entire charge of the mill. Price \$2,700, with \$1,000 down. Possession given in 60 days from time of sale. Address with stamp, Box 1462, Battle Creek, Mich. septf

**FOR SALE, AT PUBLIC AUCTION**—Valuable property, houses, and lots and salt stores. I will offer at public auction on Saturday, October 11th, the Enterprise Steam Mill, situated in the village of Enterprise, half a mile from the river, and just out of the corporation of the city of Pomeroy. Coal in abundance; costs from 2½ to 3 cents per bushel delivered at furnace door. Parties desiring to purchase are invited to correspond with the Subcriber at Enterprise Mills, near Pomeroy, Meigs county, Ohio. Terms of sale 10 per cent of purchase, money in hand; balance in ten equal yearly payments, with six per cent interest. August 12,